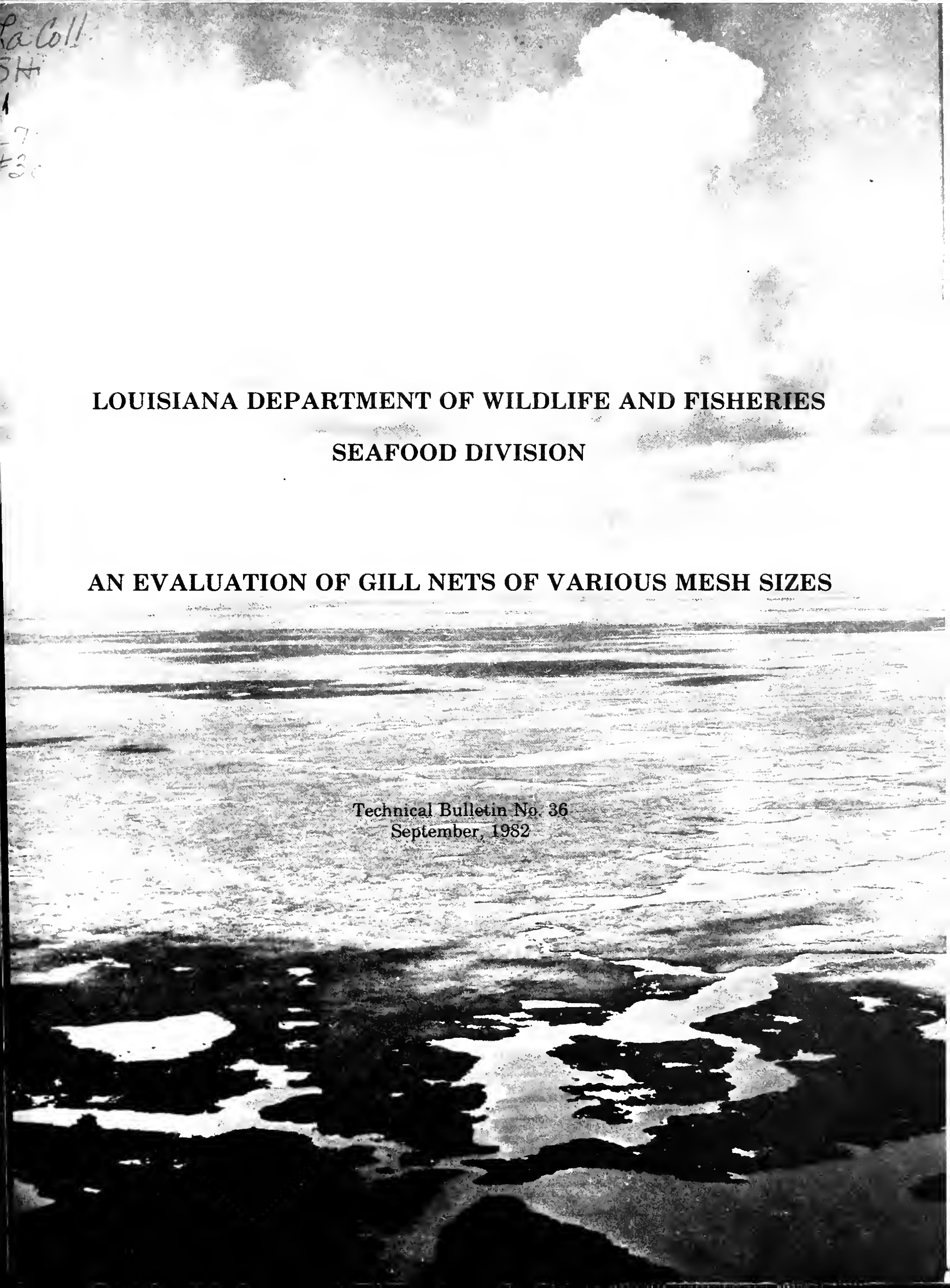

LOUISIANA DEPARTMENT OF WILDLIFE AND FISHERIES

SEAFOOD DIVISION

AN EVALUATION OF GILL NETS OF VARIOUS MESH SIZES

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LOUISIANA DEPARTMENT OF WILDLIFE AND FISHERIES
NEW ORLEANS, LOUISIANA

AN EVALUATION OF GILL NETS OF VARIOUS MESH SIZES*

BY
GERALD ADKINS
and
MARTIN J. BOURGEOIS

*THIS PROJECT WAS CONDUCTED IN COOPERATION WITH THE U.S. DEPARTMENT OF COMMERCE, NOAA, NATIONAL MARINE FISHERIES SERVICE, PUBLIC LAW 88-309, PROJECT 3-343-R.

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ABSTRACT

From April 1979 through March 1981, a total of 32.7 miles of webbing was fished. This webbing consisted of monofilament and multifilament gill nets, 1,200′ in length, each composed of three 400′ x 10′ panels of mesh measuring 1-5/8″ bar, 1-7/8″ bar, and 2″ bar mesh. The nets were fished monthly at six locations.

Forty-two different species were captured, with blue crabs *(Callinectes sapidus)* being most numerous. Nylon nets were more efficient in capturing blue crabs. Monofilament webbing, regardless of mesh size, was more efficient than multifilament. The smallest mesh (1-5/8″ bar) was the most efficient tested.

Some variance in efficiency was noted among stations, seasons, and species. Spotted seatrout were caught more efficiently in monofilament webbing, particularly in 1-5/8″ bar mesh.

A trend of longer and heavier fish was recorded as mesh size increased. Gonadal stages and spawning peaks were determined, and stomach contents of 281 specimens were observed and listed.

INTRODUCTION

Fish has historically been one of man's favorite foods; fishing, one of his favorite pastimes. Archaeologists have reported finding artifacts believed to be primitive fish hooks in areas inhabited by early man. Cave drawings, carvings, and other remnants of man's early habits depict his reliance on fish as a source of food, fertilizer, tools, and primitive weapons (i.e., large ganoid scales of garfish used as arrow and spear points). Conflicts over the use of fishing grounds and amounts of fish taken by different user groups probably date back to early man. Johnstone (1905) reported that even before 1850, British fishermen frequently complained of depleted fisheries. He stated that complaints were usually accompanied by accusations that competing types of fishing gear caused the alleged depletions. Carlton (1975) reported that literally hundreds of fisheries conflicts have been recorded since the 15th century.

The nature of fishing conflicts have varied somewhat through history, but the method of taking fish was usually a central issue in any controversy. Nets and/or netting have always caused conflicts among factions fishing the same region or harvesting similar species. Nets are one of the oldest means of catching fish; the Bible documents their use by 11 of the 12 Apostles approximately 2,000 years ago.

Around 1940, nylon gill nets began to replace cotton gill nets in the commercial fishery of the Great Lakes. Fearing overexploitation of the resource, many people pushed for laws restricting or prohibiting their use. However, abundance indices calculated separately for each gear and catch per unit of effort averages for each gear did not show a general increased efficiency for nylon gill nets (Hogman 1973).

Hamley (1975), however, reported that multifilament nylon gill nets proved to be two or three times as efficient as the linen or cotton nets they replaced. Different size and shape fish were examined by Hamley, which may account for this discrepancy.

Along the Gulf Coast, the gill-netting controversy has been evident for many years, usually with recreational fishermen on one side and commercial fishermen on the other. Each side believes it should have the right to regulate the other; according to Simmons (1976), nets and netters of any type are offensive to sports fishermen. Although this may be an irrational attitude, it is one that is unlikely to change. Oleson (1981) reported that a Miami, Florida, fish processor (Mr. Swartz) recently spearheaded a move to unite these factions (recreational and commercial) into one group to increase political clout. Mr. Swartz hopes the organization can change the "current political trend of sacrificing the fishing industry for votes", and can curtail the closing of huge portions of productive grounds to commercial fishing because it is politically popular.

In the northern Gulf of Mexico, two species are generally chosen as prime targets for regulation: spotted seatrout *(Cynoscion nebulosus,* Cuvier and Valenciennes), and red drum *(Sciaenops ocellata,* Linnaeus). More often than not, especially in Louisiana, red drum are eventually overlooked in favor of the more preferred spotted seatrout. The problem then becomes how best to divide available spotted seatrout among user groups.

In Louisiana, commercial landings of spotted seatrout had not exceeded one million pounds prior to 1971, with average annual landings of approximately 500,000 pounds being reported. In 1971, approximately 1.2 million pounds were landed; 1.8 million pounds were reported in 1972 and commercial landings peaked at approximately 2.5 million pounds in 1973. Because of fuel shortages during 1973, in order to secure maximum fuel allotments catches were apparently reported more accurately, resulting in increased reported landings (Orville Allen, NMFS, personal communication). Since 1973, landings have gradually declined, dropping below one million pounds in 1978. Preliminary figures indicate that in 1980, approximately 600,000 pounds were reported (Figure 1).[1]

The decrease following 1973 was largely attributable to additional restrictions placed upon the commercial segment and 2-3 years of successive adverse environmental conditions (freshwater flooding during 1973, 1974, and 1975, and severe winters in 1975 and 1976). Restrictions on the commercial sector consisted primarily of prohibiting the use of monofilament webbing, labelled as a "deadly effective weapon that is threatening to wipe out Louisiana's population of spotted seatrout" (Waguespack 1977). As mentioned earlier, the efficiency of particular types of fishing gear have historically been blamed for poor catches by recreational fishermen, regardless of the actual cause.

As a result of enactment of the regulations imposed upon Louisiana's commercial finfishermen, there was a change in the fishery. Because of the prohibition of monofilament webbing and a change in allowable mesh size used south of the Gulf Intracoastal Waterway (a maximum of 1" bar mesh on seines and the inner wall of trammel nets and a minimum of 2" bar mesh on nylon gill nets), commercial fishermen were forced to use gear for which there was little data useful for management purposes. Although Bennet and Brown (1968) and Sandow (1970) reported that gill nets proved to be the best means for determining species types and composition in given lakes, very little work had been done in Louisiana to determine what catches could be made by commercial fishermen using the required gear type and mesh sizes.

Trent and Pristas (1977) stated that mesh size regulations in a fishery should serve specific purposes. These regulations can be useful in controlling the

[1]La. Landings, U.S. Dept. of Commerce, NFMS, New Orleans, La.

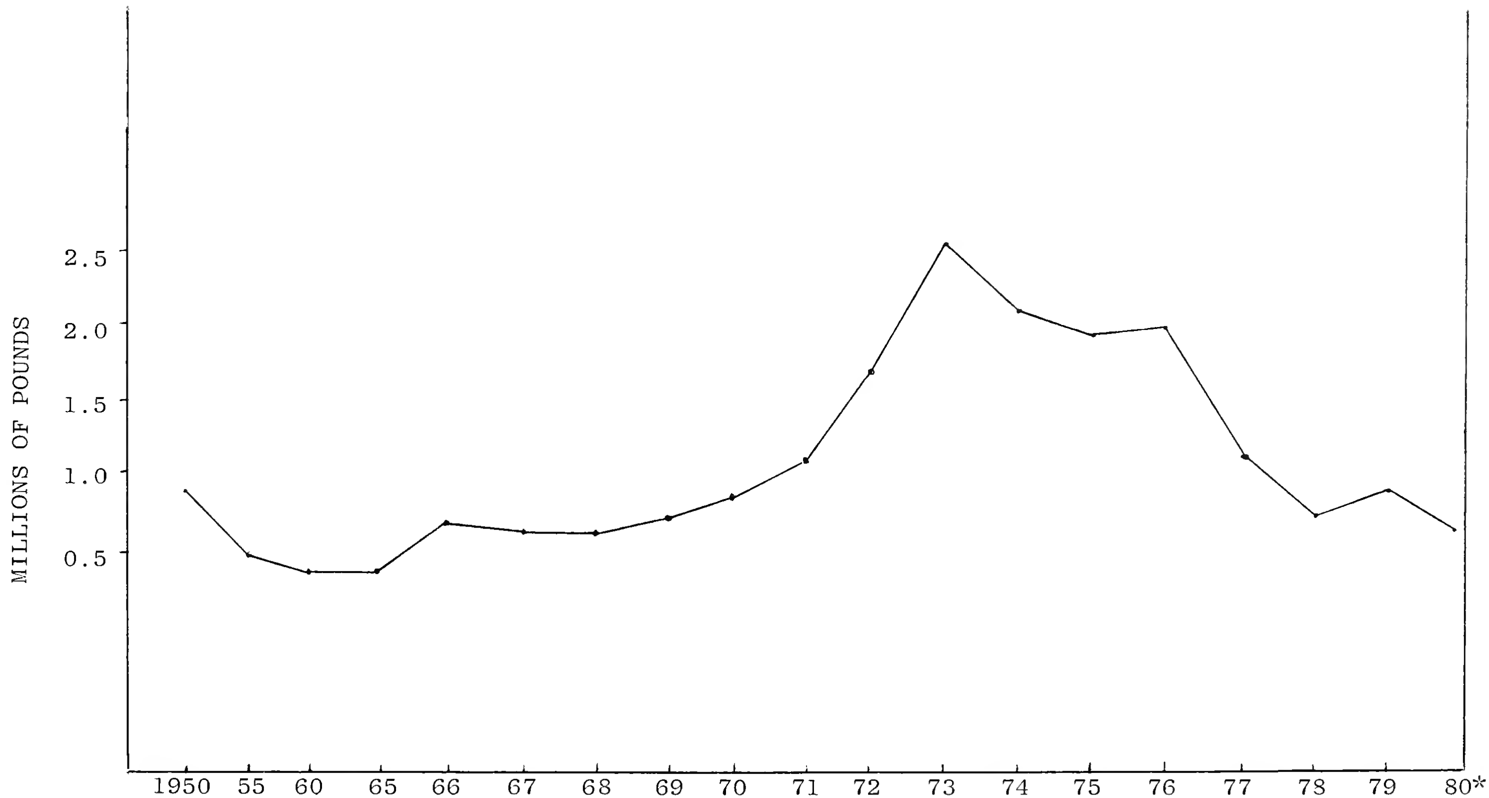

Figure 1. Commercial landings, spotted seatrout, Louisiana, selected years from 1950 through 1980.

Source: La. Landings, U.S. Department of Commerce, NMFS, New Orleans, Louisiana. *Preliminary data, Orville Allen, Personal Communication.

size of captured individuals for some species but not others, depending upon the range in sizes of fish that a given mesh size captures with a high efficiency. Mesh size can protect from harvest individuals of a species below a certain size without decreasing efficiency in the commercial gill net fishery.

Such, unfortunately, was not the case in Louisiana law. Mesh size regulations (maximum of 1" bar) were passed that would, when followed by commercial netters, result in large catches of small, unmarketable individuals in seines and trammel nets. If the larger allowable mesh size in gill nets (2" bar mesh minimum) were used, catches decreased to the point where netting was no longer profitable. This in turn resulted in less commercial netting activity because of reduced profit margins and/or the harvest of a product too small for commercial sale as well as the destruction of a tremendous number of juvenile fish.

To provide a data base upon which a management scheme regarding gear types, mesh sizes, or any combination thereof could be formulated, a study entitled "An Evaluation of Gill Nets of Various Mesh Sizes" was initiated in coastal Louisiana. The field work took place in Terrebonne and Lafourche parishes from April 1979 through March 1981. The main objectives of this study were: (1) to evaluate the efficiency (per net) of gill nets of various mesh sizes; and (2) to evaluate the efficiency (per net) of gill nets of monofilament and multifilament material. Efficiency, in this study, was defined as the catch per unit of gear (Ranthum 1974).

It was desirable to collect data that could form the basis for management recommendations or decisions regarding gear types, mesh sizes, or any combination of the two. It was hoped this study would gather additional information to complement that previously published by Adkins et al. (1979). Using data gathered from both studies, a management plan could then be formulated and implemented.

AREA DESCRIPTION

All sampling sites were located in Terrebonne and Lafourche parishes, Louisiana. This area is within the confines of Coastal Study Area IV (Figure 2), bounded by Bayou Lafourche on the east and by Bayou Grand Caillou on the west.

Of all Louisiana parishes, Terrebonne contains the largest total area (land and water) and the second largest land area (Lytle et al. 1960). Similar in topography, Terrebonne and Lafourche are two of Louisiana's southernmost parishes; only Plaquemines parish extends further southward. The climate of the area is subtropical, being mild and humid most of the year (Lytle et al. 1960). Although much of the northern reaches are suited for agriculture, pastureland, and urban development, the southern portion, in 1970, comprised approximately 262,000 acres of water (Barrett 1970). This water acreage has greatly increased since 1970 because of accelerated erosion in the area; Gagliano (1981) projected a land loss rate of 6,851 acres in 1980 for Terrebonne parish and 3,179 acres for Lafourche parish.

The accelerated rate of erosion was reported earlier by Adkins et al. (1979) and was found by Gagliano (1981) to progress geometrically. This erosion has continued during this study, particularly in the southern and eastern regions of the study area (Figure 2). During periods of high salinity, such as the summer of 1980, many areas of dead or dying vegetation were noted. The vegetation was mostly black mangrove *(Avicennia nitida)* along the shorelines, and dead areas were most evident following strong southerly winds and flood tides associated with weather systems. Soon after this vegetation died, shoreline erosion accelerated. The dying of vegetation and resulting erosion is continually contributing to the restructuring of estuarine systems and will no doubt continue if current salinity regimes persist. Gagliano (1981) reported that the deterioration can be largely attributed to modern human impact (i.e., dredging, spoil disposal, drainage, and flood control).

The study area can be generally divided into three major ecological types: (1) sand beaches, (2) salt to brackish marsh, and (3) brackish to fresh marsh. These areas have been previously described by O'Neil (1949), Lytle et al. (1960), Eggler et al. (1961), Chabreck et al. (1968), Barrett et al. (1971), and Perret et al. (1971). Reports concerning the area's flora and fauna have also been published by Davis (1973), Gagliano (1974), and Adkins (1976).

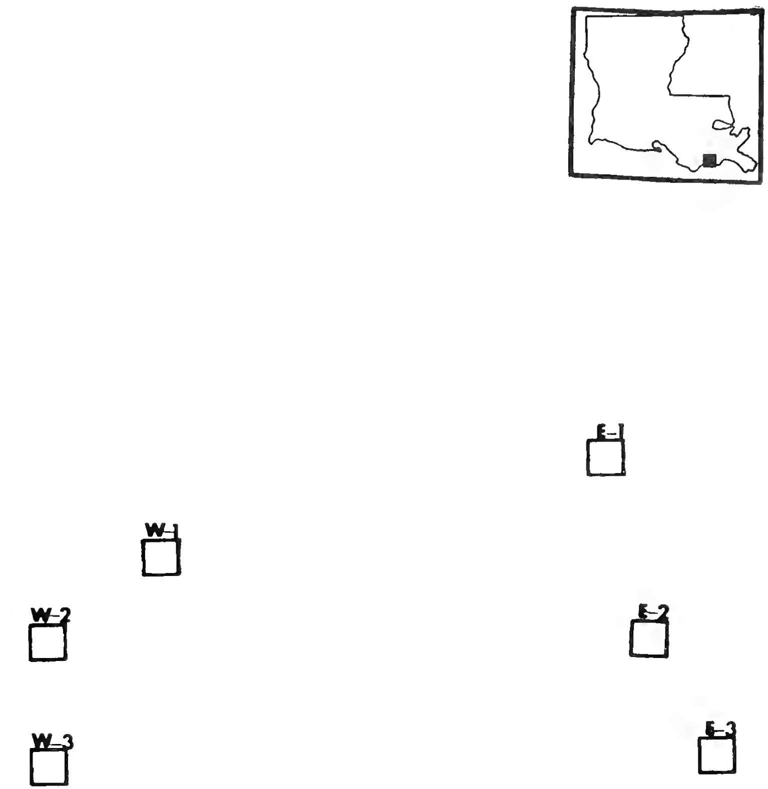

Figure 2. Location of Coastal Study Area IV, showing station locations and numbers.

MATERIALS AND METHODS

Materials

Both monofilament and multifilament gill nets were used during this two-year study. The nets were identical: the lead line was lead core, and the float line was 1/8" braided nylon line onto which hollow, oval-shaped plastic floats were strung at approximately 6' intervals. Nets were 1,200' long and 10' deep, with panels of webbing of 1-5/8" bar, 1-7/8" bar, and 2" bar mesh. Each of the three mesh sizes comprised a panel 400' long, sewn together to form a single 1,200' net. In each material type, 1-5/8" bar webbing was placed in the center panel.

The monofilament strands were transparent and had a minimum 25 lb. test strength. The multifilament webbing was No. 6 twine, black in color after treatment with net dip. The dipping process enabled the net to be worked easier, to have fewer entanglement problems, and, because of its rigidity, to catch fewer shells and trash. These are the normal gear used by commercial fishermen operating in the area.

A commercially manufactured boat similar to those used by most commercial net fishermen operating in Gulf Coast states was utilized in sampling (Figure 3). The boat is a 21' x 8' Commercial Fisherman, manufactured by Atlantic Marine, Inc., Palmetto, Florida.* The boat was powered by a 115 hp outboard motor. From previous investigations, it was determined that this type vessel was best suited for fishing nets in this area.

Hydrological data were gathered by using a battery-powered inductionless salinometer. Wind and current speed and direction, cloud cover, and tidal stage information was gathered in the field by visual observation. Turbidity was determined by using a 12" diameter Secchi disc with a 6' calibrated line.

A spring scale graduated in ounces was used to weigh all fish. Taxonomic classifications were made using keys by Jordan and Evermann (1896), Breder (1948), Gallaway et al. (1972), Walls (1975), and Hoese and Moore (1977). Invertebrates were identified by using methods established by Williams (1965).

Figure 3. Net Skiff used in net efficiency study, April 1979 through March 1981, Coastal Study Area IV.

*Mention of brand name does not imply commercial endorsement.

Methods

Six sampling stations were selected in Terrebonne and Lafourche parishes, Louisiana (Figure 2). These stations formed two north-south transects and were selected as representative sampling sites for the general area in which they were located. Additionally, they were selected because of accessibility and ease of sampling; there would be some protected area at each site during most weather conditions. The northernmost stations (E-1 and W-1) were located in the marsh complex with near or equal land/water area present at the sample sites. These locations were in bayous or shallow bays, usually with soft bottoms bearing some scattered shells. Central stations (E-2 and W-2) were located in the mid-marsh, where water areas dominated, generally near or on shell reefs or scattered shell bottoms. Southern sites (E-3 and W-3) were near the Gulf, in predominantly open water, and were near or over submerged islands, shell reefs, and sand bars.

Each station was sampled monthly with both monofilament and multifilament webbing. Upon arrival at the sampling station, research personnel attached a 10 lb. anchor to the lead line at one end of the net and a float to the float line. The anchor and float were tossed overboard and the boat was maneuvered upwind and/or upcurrent in a straight line until the end of the net was reached. The other end of the net was similarly attached to an anchor and float and placed overboard in the same manner. A "run-around"or "beating-down" process then began, during which the boat was powered around the net in gradually tightening circles. This is a commonly used method that startles or frightens the fish, causing them to flee from the noise and allowing them to be "herded" into the net, where they become gilled. After this process was completed, the end of the net first placed overboard was retrieved, the net pulled in by hand, all organisms removed, and the data accumulated for each 400′ panel of net. To reduce sampling bias, the nets were rotated each time they were retrieved, and each net remained overboard approximately the same length of time.

The total length of each fish was measured in 5 millimeter (mm) groups until 50 random individuals were measured, and total weight of all fish was recorded. The remainder were then counted and weighed. All other organisms were treated similarly, except for blue crabs and spotted seatrout. Blue crabs were sexed and the carapace width measured. Spotted seatrout were sexed, the gonadal stage determined, and stomach contents observed. Gonadal stages were determined according to procedures established by Guest and Gunter (1958). Stomach contents were identified whenever possible. If digestion rendered identification unfeasible, contents were noted as fish remains, small crabs, polychaetes, etc.

All data were coded and submitted to the data coordinator for storage, listing, analysis, and future retrieval.

Hydrological and other (wind direction and velocity, turbidity, sky cover, and current velocity) data were gathered when samples were secured. Salinity was recorded in parts per thousand (ppt) and temperature was recorded in degrees Centrigrade (C).

HYDROLOGICAL FINDINGS

Salinity

Salinities ranged from 5.8 ppt at Station W-1 in June 1979 to 33.2 ppt at Station E-3 during December 1980. Salinities were higher throughout the area during 1980-81 than 1979-80. This was attributable to the drought that existed throughout most of the Gulf states during the 1980-81 sampling period. As expected, Stations E-3 and W-3, located nearest the Gulf, yielded the highest average salinities. Stations E-1 and W-1 experienced monthly fluctuations and lower average salinities because of local rainfall runoff. Salinities were usually lower from April to July of each year because of heavier local rainfall and high river discharge. Recorded salinities during 1979-80 were similar to those reported in 1972 (Barrett et al.; Perret, et al.) and in 1971 (Adkins).

At all stations, salinities averaged approximately 6-7 ppt higher in 1980-81 than in 1979-80. Station E-1 maintained the lowest average salinity; Station W-3 revealed the highest (Table 1). Primarily because of these higher salinities, marsh erosion was noticeably accelerated. Vegetation was killed by exposure to prolonged high salinities, and wave action quickly denuded previously vegetated areas.

As Gunter (1956), Tabb (1966), and Adkins et al. (1979) reported finding spotted seatrout to inhabit and to be abundant in salinities ranging from 2.3 to 35.0 ppt, all stations sampled were suitable for this fish.

Water Temperature

In contrast to temperatures recorded during January 1970 (3.7C) by Adkins (1972), December 1976 and January 1977 (4.7C) (Adkins et al. 1979), temperatures during this study period were relatively mild. The lowest average temperature recorded occurred in February 1981 (9.1C). Highest recorded average temperature was at Station W-2 (33.2C). This average was recorded during July 1979.

Average temperatures between study years were very similar. The greatest difference recorded was 0.3C between Stations W-1 and E-1; Station W-3 readings revealed a difference of only 0.1C. In all cases, slightly warmer temperatures were reported during 1980-81 than in 1979-80.

Stations nearest the Gulf (E-3 and W-3) revealed the highest average temperatures; lowest average temperatures were recorded at Station W-1 (Table 1).

Temperatures from all stations followed very closely trends established in prior studies in this area.

Table 1.
Average salinities and temperatures at each station by month, study year, project, and total averages from April 1979 through March 1981, Coastal Study Area IV. Salinities shown in parts per thousand and temperature shown in degrees Centigrade.

Month	W-1		W-2		W-3		E-1		E-2		E-3	
	Sal	Temp	Sal	Temp	Sal	Temp	Sal	Temp	Sal	Temp	Sal	Temp
April 1979	9.9	23.7	14.5	23.7	16.5	22.8	12.7	25.4	12.8	25.0	12.6	24.6
May	—	—	—	—	13.4	25.2	10.4	26.8	12.4	26.4	13.6	26.3
June	5.8	31.2	9.5	30.9	15.3	29.5	11.4	28.3	16.4	28.3	16.6	27.8
July	12.3	31.2	11.6	33.2	15.3	32.1	7.9	30.3	18.2	30.6	22.2	29.8
Aug.	14.2	31.9	13.7	32.4	22.4	31.9	13.5	31.8	21.1	31.6	21.0	31.2
Sept.	13.9	31.1	16.5	30.6	20.1	30.4	13.1	25.8	19.0	25.8	21.9	25.6
Oct.	16.5	25.9	19.6	24.4	26.4	24.4	17.7	23.5	19.7	22.9	23.9	22.1
Nov.	17.3	16.9	20.6	18.3	25.7	17.8	18.4	17.0	23.0	18.1	26.7	18.7
Dec.	18.4	10.3	17.2	9.9	24.8	11.6	17.4	14.0	20.5	14.6	19.8	15.8
Jan. **1980**	14.4	14.3	12.5	14.3	20.7	15.0	14.2	17.0	17.6	17.5	21.8	17.2
Feb.	14.6	10.3	17.6	10.8	22.7	11.0	13.1	14.2	17.1	14.8	21.9	15.9
March	16.3	14.2	17.1	15.1	25.3	15.7	15.6	19.6	25.4	19.7	26.3	22.8
Yearly Average	13.9	22.0	15.3	22.3	21.0	22.3	13.8	22.8	18.6	22.9	20.6	23.1
April 1980	15.3	21.6	18.6	19.4	27.1	19.2	14.4	22.5	19.5	22.3	20.6	22.9
May	12.5	26.6	16.4	26.0	22.2	24.7	14.0	29.9	18.8	28.8	21.6	27.7
June	11.4	29.0	14.7	29.4	23.0	30.0	13.8	28.9	17.8	29.3	22.1	30.1
July	16.7	32.5	23.9	31.8	28.6	31.5	14.9	30.9	25.0	30.2	29.9	31.7
Aug.	22.3	32.6	24.6	32.2	27.1	31.6	20.6	29.9	28.0	30.1	29.5	29.6
Sept.	25.5	28.4	25.3	29.2	26.5	29.7	17.4	30.1	24.7	29.9	24.9	30.5
Oct.	23.0	19.8	22.6	21.0	31.6	21.4	15.7	20.2	20.8	20.9	25.6	16.6
Nov.	24.5	16.4	25.4	17.6	30.2	17.3	20.1	16.5	25.3	18.0	31.0	17.1
Dec.	24.8	14.5	25.4	14.3	32.8	14.3	24.6	21.7	29.7	21.4	33.2	21.0
Jan. **1981**	25.4	9.2	25.4	9.4	30.9	10.0	22.0	10.3	23.1	10.3	29.5	11.4
Feb.	24.5	9.5	22.6	9.1	28.8	10.0	12.5	17.9	23.6	17.0	25.9	17.2
March	27.2	18.2	25.1	16.6	26.9	15.5	19.5	15.4	21.1	15.6	30.4	17.0
Yearly Average	20.2	22.3	22.2	22.5	27.7	22.4	17.3	23.1	22.8	23.1	26.8	23.3
Project Average	17.1	22.1	18.8	22.4	24.4	22.3	15.5	22.9	20.7	23.0	23.6	23.2

Total Average (all stations): Salinity - 20.0; Temperature - 22.7

BIOLOGICAL FINDINGS

A phylogenetic list of all organisms captured in gill nets of all mesh sizes and materials is presented in Table 2. Included are invertebrates, fishes, and reptiles representing 3 animal phyla, 4 classes, 10 orders, and 27 families.

Fishes representing 2 taxonomic classes, 8 orders, and 22 families were captured, with members of the family Sciaenidae being most numerous. Six species of cartilaginous fishes *(Class Chondrichthyes)* were captured in gill nets, including bull shark, sandshark, Atlantic sharpnose shark, bonnethead shark, Atlantic stingray, and cownose ray. These animals became entangled in the webbing and were not gilled. Thirty-one species of bony fishes *(Class Osteichthyes)* were captured in gill nets and ranged in size from large alligator gar found in fresh and brackish water areas to small marine organisms, such as striped anchovy, that became entangled in the webbing. Marine fishes such as cobia, bluefish, and Florida pompano as well as freshwater forms (gizzard shad) were captured in gill nets.

One species of reptile, the diamondback terrapin *(Class Reptilia)* was taken in gill nets. This species, having a preference for fresh to brackish water areas, was captured only at the northern stations of each transect and was observed to be entangled in the webbing.

A total of 5,526 individuals representing 42 species were taken (Table 3). Of the 5,526 animals, blue crabs were the most numerous (1,746) and composed 32 percent of the total.

Blue crabs were more numerous in nylon nets than in monofilament nets (1,106 vs 640) and occurred in the catch during all months except January 1981. Catches of blue crabs were lowest from November through February of the first year and from October through March of the second year. They were generally more numerous during warmer months, specifically July and August of each year.

Nylon nets were more efficient (approximately 2:1) for capturing blue crabs during each year, and the 2″ bar mesh was the most efficient mesh size. This compares favorably with data gathered by Adkins (1972) in testing an experimental crab trawl. Of three mesh sizes tested, the 2″ bar mesh size was the most productive.

Many crabs were observed hanging onto the monofilament nets and letting go when they were lifted clear of the water, whereas they would usually become more entangled in the nylon net. The rigidity of the monofilament net probably contributed to a greater rate of escape than did the nylon webbing. Blue crabs were the fourth and fifth most abundant animal taken in monofilament gill nets and nylon trammel nets, respectively, during a previous study in this area (Adkins et al. 1979).

Sea catfish were the second most abundant animal captured. Monofilament nets were more efficient (approximately 2:1) in their capture than were nylon nets (865 vs 461). A total of 1,326 individuals were caught; this comprised 24 percent of the total catch. The most efficient mesh size was 1-5/8" bar, both in monofilament and nylon nets. More sea catfish were recorded taken in monofilament nets the first year but the second year revealed a higher rate of capture in nylon nets. These animals were essentially absent from the catch from November to February of each year and were present in greater numbers during June, July and August of each year. Sea catfish were the second most numerous animal taken in monofilament gill nets during 1976-77 (Adkins et al. 1979) in Area IV and were the most numerous species in Coastal Study Area I (southeastern coastal Louisiana) during the same time.

The body shape of sea catfish causes entanglement in any type of gear used because the spines are barbed on each side and are almost always the reason for capture. Because of the danger associated with the removal of catfish, as is the case with blue crabs, they are generally regarded as pests by most net fishermen, trawlers, and wing-net fishermen.

Spotted seatrout were the third most numerous species taken, and they were recorded during all months of the project. The most efficient material was monofilament (832 vs 440, or approximately 2:1), and the most efficient mesh size was 1-5/8″ bar, regardless of material type. This mesh size captured approximately three times more fish than did the next largest mesh, 1-7/8″ bar. A total of 1,272 spotted seatrout were captured, with more fish being taken during the second year than during the first (Table 3). This was due to a mild winter and above average salinities that occurred throughout Coastal Study Area IV. Below average salinities existed during spring and early summer months of the first study year (Table 1).

Catches were low during winter months of each year, especially in nylon nets. No spotted seatrout were recorded from nylon nets during September 1979, February 1980, and January 1981. Low winter catches were also reported by Mahood (1974) and Adkins et al. (1979). Spotted seatrout composed 23 percent of the total catch and were most often captured at central and southernmost locations.

Table 2.
A phylogenetic list of all species taken in gill nets, April 1979 through March 1981, Coastal Study Area IV.

Class Crustacea
- Order Decapoda
  - Family Penaediae
    - *Penaeus setiferus* - White Shrimp
  - Family Majidae
    - *Libinia emarginata* - Spider Crab
  - Family Portunidae
    - *Callinectes sapidus* (Rathbun) - Blue Crab
  - Family Xanthidae
    - *Menippe mercenaria* (Say)- Stone Crab

Class Chondrichthyes
- Order Squaliformes
  - Family Carcharhinidae
    - *Carcharhinus leucas* (Valenciennes) - Bull Shark
    - *Carcharhinus milberti* (Valenciennes) - Sand Shark
    - *Rhizoprionodon terraenovae* (Richardson) - Atlantic Sharpnose Shark
  - Family Sphyrnidae
    - *Sphyrna tiburo* (Linnaeus) - Bonnethead Shark
- Order Rajiformes
  - Family Dasyatidae
    - *Dasyatis sabina* (Lesueur) - Atlantic Stingray
  - Family Myliobtidae
    - *Rhinoptera bonasus* (Mitchill) - Cownosed Ray

Class Osteichthyes
- Order Semionotiformes
  - Family Lepisosteidae
    - *Lepisosteus spatula* (Lacepede) - Alligator Gar
- Order Elopiformes
  - Family Elopidae
    - *Elops saurus* (Linnaeus) - Ladyfish
- Order Clupeiformes
  - Family Clupeidae
    - *Alosa chrysochloris* (Rafinesque) - Skipjack Herring
    - *Brevoortia patronus* (Goode) - Gulf Menhaden
    - *Dorosoma cepedianum* (Lesueur) - Gizzard Shad
  - Family Engraulidae
    - *Anchoa hepsetus* (Linnaeus) - Striped Anchovy
- Order Siluriformes
  - Family Ariidae
    - *Arius felis* (Linnaeus) - Sea Catfish
    - *Bagre marinus* (Mitchill) - Gafftopsail Catfish
- Order Perciformes
  - Family Pomatomidae
    - *Pomatomus saltatrix* (Linnaeus) - Bluefish
  - Family Rachycentridae
    - *Rachycentron canadum* (Linnaeus) - Cobia
  - Family Echeneidae
    - *Remora remora* (Linnaeus) - Remora
  - Family Carangidae
    - *Caranx hippos* (Linnaeus) - Crevalle Jack
    - *Chloroscombrus chrysurus* (Linnaeus) - Atlantic Bumper
    - *Trachinotus carolinus* (Linnaeus) - Florida Pompano
  - Family Lobotidae
    - *Lobotes surinamensis* (Block) - Tripletail
  - Family Pomadasyidae
    - *Orthopristis chrysoptera* (Linnaeus) - Pigfish
  - Family Sparidae
    - *Archosargus probatocephalus* (Walbaum) - Sheepshead
    - *Lagodon rhomboides* (Linnaeus) - Pigfish
  - Family Sciaenidae
    - *Bairdiella chrysura* (Lacepede) - Silver Perch
    - *Cynoscion arenarius* (Gensburg) - Sand Seatrout
    - *Cynoscion nebulosus* (Cuvier) - Spotted Seatrout
    - *Leiostomus xanthurus* (Lacepede) - Spot
    - *Menticirrhus americanus* (Linnaeus) - Southern Kingfish
    - *Micropogonias undulatus* (Girard) - Atlantic Croaker
    - *Pogonias cromis* (Linnaeus) - Black Drum
    - *Sciaenops ocellata* (Linnaeus) - Red Drum
  - Family Ephippidae
    - *Chaetodipterus faber* (Broussonet) - Atlantic Spadefish
  - Family Mugilidae
    - *Mugil cephalus* (Linnaeus) - Striped Mullet
  - Family Scombridae
    - *Scomberomorus maculatus* (Mitchill) - Spanish Mackerel
  - Family Stronateidae
    - *Peprilus alepidotus* (Linnaeus) - Southern Harvestfish
- Order Pleuronectiformes
  - Family Bothidae
    - *Paralichthys lethostigma* (Jordan and Gilbert) - Southern Flounder

Class Reptilia
- Order Chelonia
  - Family Emydidae
    - *Malaclemys terrapin* - Diamondback Terrapin

Tabl

Catch by month, study year, mesh size, materi through March 1981, Coastal Study Area I totals (listed in order of abundanc

	1979 Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1980 Jan.	Feb.	M
Blue Crab *(Callinectes sapidus)*												
Monofilament												
1-5/8″ x 3-1/4″	1	2	5	47	18	22	4	1	0	0	0	
1-7/8″ x 3-3/4″	2	4	7	53	12	16	4	0	0	0	0	
2″ x 4″	2	3	12	46	20	10	2	3	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	5	11	10	74	68	8	7	2	0	6	1	2
1-7/8″ x 3-3/4″	5	7	20	91	34	4	6	1	1	2	0	6
2″ x 4″	5	9	32	107	36	6	11	2	0	1	0	1
Sea Catfish *(Arius felis)*												
Monofilament												
1-5/8″ x 3-1/4″	42	1	14	57	58	20	6	3	0	0	0	1
1-7/8″ x 3-3/4″	34	11	18	24	61	26	6	2	0	0	0	
2″ x 4″	9	0	10	23	25	6	14	3	0	0	0	1
Multifilament												
1-5/8″ x 3-1/4″	7	10	10	13	4	6	0	0	0	3	1	1
1-7/8″ x 3-3/4″	4	10	4	11	10	3	0	0	0	6	1	
2″ x 4″	10	22	4	30	7	2	0	0	0	4	4	
Spotted Seatrout *(Cynoscion nebulosus)*												
Monofilament												
1-5/8″ x 3-1/4″	5	8	0	13	9	4	15	34	1	9	2	1
1-7/8″ x 3-3/4″	11	0	1	1	2	2	5	1	5	42	7	1
2″ x 4″	5	0	0	0	1	4	3	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	7	25	18	12	2	0	31	16	2	6	0	
1-7/8″ x 3-3/4″	1	3	5	10	1	0	4	1	16	1	0	
2″ x 4″	7	3	1	1	0	0	3	1	0	1	0	
Gulf Menhaden *(Brevoortia patronus)*												
Monofilament												
1-5/8″ x 3-1/4″	0	1	0	1	99	9	19	2	2	1	0	
1-7/8″ x 3-3/4″	0	0	0	1	40	4	4	0	0	0	0	
2″ x 4″	0	0	2	1	4	0	0	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	3	24	3	0	0	1	2	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	2	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	1	0	0	0	0	0	
Black Drum *(Pogonias cromis)*												
Monofilament												
1-5/8″ x 3-1/4″	2	0	0	0	1	0	1	1	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	1	1	2	0	
2″ x 4″	1	0	0	0	0	1	0	0	3	1	0	
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	3	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	1	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	1	1	0	

pe, and species caught, April 1979
so shown are study year and project
d including red drum).

May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1981 Jan.	Feb.	Mar.	1979-80 Total	1980-81 Total	Proj. Total
10	17	28	33	23	0	2	0	0	0	0	102	119	221
6	5	39	28	14	0	0	0	0	0	0	100	112	212
4	5	27	34	21	0	3	1	0	0	0	103	104	207
12	36	79	21	14	1	1	0	0	1	1	217	169	386
12	16	27	20	8	2	0	0	0	0	0	231	88	319
14	62	58	23	13	0	2	0	0	1	1	221	180	401
34	19	62	10	6	3	2	0	0	0	11	218	170	388
7	21	40	10	2	1	1	0	0	0	6	184	101	285
20	17	9	0	4	2	2	0	0	0	7	101	91	192
37	23	18	19	2	2	0	0	0	0	8	69	124	193
30	4	6	8	0	0	0	0	0	0	12	54	66	120
12	12	14	6	1	2	0	0	0	0	8	87	61	148
102	28	8	11	2	105	51	11	12	1	22	112	370	482
31	3	4	22	3	60	21	1	1	0	2	94	155	249
7	1	2	9	1	38	3	6	12	0	6	16	85	101
10	6	6	9	19	21	70	1	0	1	8	123	172	295
5	3	4	1	2	8	12	0	0	1	1	48	64	112
0	1	1	0	1	1	1	0	0	0	0	18	15	33
65	3	0	0	0	0	0	0	0	0	0	134	70	204
5	1	0	0	0	0	0	0	0	0	0	49	6	55
22	1	0	1	0	0	0	0	0	0	0	7	24	31
0	0	0	0	0	2	0	0	0	0	0	33	2	35
0	0	0	0	0	0	0	0	0	0	0	2	0	2
0	0	0	0	0	0	0	0	0	0	0	1	0	1
2	1	0	0	0	0	3	5	1	0	4	5	16	21
3	0	0	0	0	0	17	0	2	0	12	4	38	42
25	0	0	0	0	2	0	4	4	0	2	8	37	45
11	0	0	2	0	[illegible]	0	1	0	0	0	3	15	18
3	0	0	0	0	0	0	2	1	1	0	1	7	8
0	0	1	0	0		0	1	1	0	1	2	6	8

Table 3. Continued

	1979									1980		
	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	M
Spanish Mackerel *(Scomberomorus maculatus)*												
Monofilament												
1-5/8″ x 3-1/4″	1	2	8	0	1	1	1	0	0	0	0	
1-7/8″ x 3-3/4″	2	5	1	0	1	0	2	0	0	0	0	
2″ x 4″	6	3	0	1	2	0	0	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	1	0	1	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
Spot *(Leiostomus xanthurus)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	1	0	0	26	15	10	0	0	0	
1-7/8″ x 3-3/4″	0	0	1	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	0	1	0	0	1	0	22	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	1	2	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
Southern Harvestfish *(Peprilus alepidotus)*												
Monofilament												
1-5/8″ x 3-1/4″	0	1	1	0	0	2	1	0	0	0	0	
1-7/8″ x 3-3/4″	0	3	0	0	7	2	0	0	0	0	0	
2″ x 4″	0	4	2	1	1	1	0	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	0	1	1	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	1	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	1	0	0	0	0	0	0	0	0	
Sheepshead *(Archosargus probatocephalus)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	8	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	1	1	0	0	4	0	0	0	
2″ x 4″	1	0	0	0	0	0	0	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	2	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	1	1	0	0	
2″ x 4″	0	0	0	0	0	0	0	12	0	1	0	
Southern Flounder *(Paralichthys lethostigma)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	1	3	1	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	1	0	0	1	1	2	0	0	0	0	0	
2″ x 4″	0	0	0	0	3	0	0	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	0	0	7	0	0	0	0	0	0	1	0	
1-7/8″ x 3-3/4″	0	0	0	1	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	4	0	0	0	0	0	0	0	

May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1981 Jan.	Feb.	Mar.	1979-80 Total	1980-81 Total	Proj. Total
5	11	3	5	6	0	1	0	0	0	0	14	34	48
2	1	1	7	2	11	1	0	0	0	0	11	27	38
3	4	0	0	2	2	0	0	0	0	0	12	15	27
0	0	0	0	1	0	0	0	0	0	0	2	1	3
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	1	0	1	1	13	4	0	0	0	0	52	22	74
0	0	0	0	0	0	0	0	0	0	0	1	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	2	1	13	3	16	0	0	0	0	1	24	38	62
0	0	0	0	0	0	0	0	0	0	0	3	0	3
0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	3	4	1	1	0	0	0	0	0	0	5	12	17
5	1	1	1	0	1	0	0	0	0	0	12	9	21
9	0	3	0	0	0	0	0	0	0	0	9	12	21
0	0	0	0	0	0	0	0	0	0	0	2	0	2
2	0	0	0	1	0	0	0	0	0	0	1	3	4
0	0	0	0	0	0	0	0	0	0	0	1	1	2
0	0	0	2	0	1	0	1	0	0	0	8	4	12
0	0	0	1	0	0	1	0	0	0	1	7	3	10
0	0	0	7	0	0	0	0	1	0	0	1	8	9
0	0	0	0	0	0	0	0	1	0	0	2	1	3
0	0	0	0	1	1	0	0	0	0	0	2	3	5
0	0	7	1	0	0	0	0	0	0	0	13	8	21
0	1	0	0	0	0	0	0	0	0	0	5	2	7
1	0	0	0	0	0	0	0	0	0	0	6	1	7
0	0	0	1	0	0	0	0	0	0	0	3	1	4
0	0	0	1	2	0	0	0	0	0	0	9	3	12
3	0	0	0	3	1	0	1	0	0	0	1	8	9
1	0	0	0	1	0	0	0	0	0	0	4	3	7

Table 3. Continued.

	1979 Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1980 Jan.	Feb.	M
Gafftopsail Catfish *(Bagre marinus)*												
Monofilament												
1-5/8″ x 3-1/4″	0	5	0	0	0	1	0	0	0	0	0	
1-7/8″ x 3-3/4″	1	1	1	0	0	0	0	0	0	0	0	
2″ x 4″	1	9	0	0	1	0	0	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
Spadefish *(Chaetodipterus faber)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	1	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	1	0	0	0	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	1	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	6	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	1	0	0	0	0	0	0	0	0	
White Trout *(Cynoscion arenarius)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	1	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	3	1	4	0	0	0	0	
2″ x 4″	1	1	0	0	1	0	0	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	2	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
Cownose Ray *(Rhinoptera bonasus)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	7	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	2	0	0	0	0	0	
2″ x 4″	1	0	0	0	0	0	6	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
Atlantic Stingray *(Dasyatis sabina)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	3	0	0	0	0	0	0	0	
2″ x 4″	0	0	1	0	0	0	0	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	1	0	0	0	0	0	0	0	1	1	
2″ x 4″	0	0	0	0	0	0	0	0	0	1	0	

May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1981 Jan.	Feb.	Mar.	1979-81 Total	1980-81 Total	Proj. Total
1	1	1	0	0	0	0	0	0	0	0	7	4	11
0	2	1	4	0	0	0	0	0	0	0	3	10	13
6	0	0	1	1	0	0	0	0	0	0	11	8	19
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	1	0	0	0	0	0	0	0	0	0	2	2
0	0	0	1	0	1	0	0	0	0	0	1	2	3
1	0	0	1	1	0	0	0	0	0	0	0	3	3
0	0	0	1	0	1	0	0	0	0	0	1	2	3
1	1	1	1	5	0	0	0	0	0	0	1	9	10
0	1	3	0	1	1	0	0	0	0	0	6	6	12
0	0	1	4	6	0	0	0	0	0	0	1	11	12
0	0	0	0	1	0	0	0	0	0	0	1	1	2
1	0	0	0	2	1	0	0	0	0	0	8	4	12
0	0	0	0	1	1	0	0	0	0	0	3	2	5
0	0	0	0	0	1	0	0	0	0	0	2	1	3
0	0	0	0	1	0	0	0	0	0	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	7	1	8
0	0	0	0	0	0	0	0	0	0	0	2	0	2
0	0	0	0	0	0	0	0	0	0	0	7	0	7
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	1	0	0	0	0	2	2
0	0	0	0	0	0	0	0	0	0	0	3	0	3
1	1	0	0	0	0	0	0	0	0	0	1	2	3
1	0	1	0	0	0	0	0	0	0	0	0	2	2
0	0	0	0	0	0	0	0	0	0	0	4	1	5
0	0	0	0	0	0	0	0	0	0	0	1	0	1

Table 3. Continued

	1979 Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1980 Jan.	Feb.	Ma
Bull Shark *(Carcharhinus leucas)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	[illegible]
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	[illegible]
2″ x 4″	0	0	0	1	1	0	0	0	0	0	0	[illegible]
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	1	0	0	0	0	0	0	0	[illegible]
1-7/8″ x 3-3/4″	0	0	0	1	0	0	0	0	0	0	0	[illegible]
2″ x 4″	0	0	0	1	0	0	0	0	0	0	0	[illegible]
Red Drum *(Sciaenops ocellata)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	[illegible]
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	[illegible]
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	[illegible]
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	[illegible]
1-7/8″ x 3-3/4″	0	0	0	0	0	0	1	0	0	0	0	[illegible]
2″ x 4″	0	0	0	0	0	0	0	1	0	0	0	[illegible]
Southern Kingfish *(Menticirrhus americanus)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	[illegible]
1-7/8″ x 3-3/4″	1	0	0	1	0	0	0	0	0	0	0	[illegible]
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	[illegible]
Multifilament												
1-5/8″ x 3-1/4″	0	1	1	0	0	0	0	0	0	0	0	[illegible]
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	[illegible]
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	[illegible]
Alligator Gar *(Lepisosteus spatula)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	[illegible]
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	[illegible]
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	[illegible]
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	1	0	1	0	0	[illegible]
1-7/8″ x 3-3/4″	1	0	0	0	0	0	1	0	0	0	0	[illegible]
2″ x 4″	0	0	1	0	0	0	0	1	0	0	0	[illegible]
Atlantic Croaker *(Micropogonias undulatus)*												
Monofilament												
1-5/8″ x 3-1/4″	0	1	1	0	0	1	0	0	0	0	0	[illegible]
1-7/8″ x 3-3/4″	0	0	0	1	0	0	0	0	0	0	0	[illegible]
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	[illegible]
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	[illegible]
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	[illegible]
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	[illegible]

May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1981 Jan.	Feb.	Mar.	1979-80 Total	1980-81 Total	Proj. Total
0	0	0	0	0	0	1	0	0	0	0	0	1	1
0	0	1	0	2	1	0	0	0	0	0	0	4	4
0	1	1	0	0	0	0	0	0	0	0	2	3	5
0	0	0	0	0	0	0	0	0	0	0	1	0	1
0	0	1	0	0	0	0	0	0	0	0	1	1	2
0	0	0	0	0	0	0	0	0	0	0	1	0	1
0	0	0	1	0	0	0	0	0	0	0	0	1	1
0	0	1	0	0	0	0	0	0	0	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	1	0	1
0	0	1	0	0	0	0	0	0	0	0	0	2	2
0	0	2	1	0	0	0	1	0	0	0	1	4	5
0	0	2	0	0	0	0	0	0	0	0	1	2	3
0	1	0	0	0	0	0	0	0	0	0	2	1	3
0	0	0	0	0	0	0	0	0	0	0	3	0	3
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	1	0	0	1	2	3	5
0	0	0	0	0	0	0	0	0	1	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	2	1	3
0	0	0	0	0	1	0	0	0	0	0	2	1	3
0	0	0	0	0	0	0	0	0	0	0	2	1	3
0	0	0	0	0	0	0	0	0	0	0	2	1	3
0	0	0	0	0	1	0	0	0	0	0	1	1	2
0	0	0	1	0	1	0	0	0	0	0	1	2	3
0	0	0	1	0	0	0	0	0	0	0	0	1	1
0	0	1	2	0	1	0	0	0	0	0	0	4	4
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	1	1

Table 3. Continued

	1979 Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1980 Jan.	Feb.	Ma
Atlantic Sharpnose Shark *(Rhizoprionodon terraenovae)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	0
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	0
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	0
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	0
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	0
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	0
Diamondback Terrapin *(Malaclemys terrapin)*												
Monofilament												
1-5/8″ x 3-1/4″	1	0	0	0	0	0	0	0	0	0	0	0
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	0
2″ x 4″	1	0	0	0	0	0	0	0	0	0	0	0
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	0
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	1
2″ x 4″	0	0	0	0	0	0	1	0	0	0	0	0
Ladyfish *(Elops saurus)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	1	0	0	0	0	0	0
1-7/8″ x 3-3/4″	0	0	0	0	1	0	0	0	0	0	0	0
2″ x 4″	0	0	0	0	0	1	1	0	0	0	0	0
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	0
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	0
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	0
Striped Mullet *(Mugil cephalus)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	1	0	0	0	0	0
1-7/8″ x 3-3/4″	0	0	0	1	0	0	0	0	0	0	0	0
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	0
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	0
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	0
2″ x 4″	0	0	0	0	0	1	0	0	0	0	0	0
Pigfish *(Orthopristes chrysoptera)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	0
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	0
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	0
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	0
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	0
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	0

May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1981 Jan.	Feb.	Mar.	1979-80 Total	1980-81 Total	Proj. Total
0	0	1	0	0	0	0	0	0	0	0	0	1	1
0	1	0	0	0	0	0	0	0	0	0	0	1	1
0	1	0	0	0	0	0	0	0	0	0	0	1	1
0	0	2	0	0	0	0	0	0	0	0	0	2	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	4	0	0	0	0	0	0	0	0	0	4	4
0	0	0	0	0	0	1	0	0	0	0	1	2	3
0	0	0	0	0	0	0	0	0	0	1	0	1	1
0	0	0	0	0	0	1	0	0	0	0	1	2	3
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	1
0	0	0	0	0	0	0	0	0	0	0	1	0	1
0	0	1	0	1	0	0	0	0	0	0	1	2	3
0	0	0	1	0	0	0	0	0	0	0	1	1	2
0	0	0	1	0	0	0	0	0	0	0	2	1	3
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	1	0	1	0	0	0	0	0	1	2	3
0	0	1	0	0	0	0	0	0	0	1	1	2	3
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	1
0	0	0	0	0	3	0	0	0	0	0	0	3	3
0	0	1	0	0	0	0	0	0	0	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	1	0	1	1	0	0	0	0	0	3	3
0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 3. Continued

	1979									1980		
	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	M
Cobia *(Rachycentron canadum)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
Skipjack Herring *(Alosa chrysochloris)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	1	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	1	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	1	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
Stone Crab *(Menippe mercenaria)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	1	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	1	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	1	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
Florida Pompano *(Trachinotus carolinus)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	1	0	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
Gizzard Shad *(Dorosoma cepedianum)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	

May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1981 Jan.	Feb.	Mar.	1979-80 Total	1980-81 Total	Proj. Total
0	0	2	0	0	0	0	0	0	0	0	0	2	2
0	0	2	0	0	0	0	0	0	0	0	0	2	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	2	0	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	1
0	0	0	0	0	0	0	0	0	0	0	1	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	1
0	0	0	0	0	0	0	0	0	0	0	1	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	1	1	0	0	0	0	0	1	2	3
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	1	2
0	0	0	0	0	0	0	0	0	0	0	1	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 3. Continued

	1979 Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1980 Jan.	Feb.	M
Bluefish *(Pomatomus saltatrix)*												
Monofilament												
1-5/8″ x 3-1/4″	0	1	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
Jackfish *(Caranx hippos)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	1	0	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
Striped Anchovy *(Anchoa hepsetus)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	2	0	0	0	0	0	0	
Silver Perch *(Bairdiella chrysura)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	1	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
Sand Shark *(Carcharhinus milberti)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	0	1	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	1	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	

.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1981 Jan.	Feb.	Mar.	1979-80 Total	1980-81 Total	Proj. Total
	0	0	0	0	0	0	0	0	0	0	0	1	0	1
	0	0	0	0	0	0	1	0	0	0	0	0	1	1
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	1	1	2
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	2	0	2
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	1	1	2
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1	0	1
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1	0	1
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 3. Continued

	1979 Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1980 Jan.	Feb.	M
Bonnethead Shark *(Sphyrna tiburo)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	1	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
White Shrimp *(Penaeus setiferus)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	1	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	1	0	0	0	0	0	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
Tripletail *(Lobotes surinamensis)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	1	0	0	0	0	0	0	0	0	0	
Pinfish *(Lagodon rhomboides)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	0	1	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	
Atlantic Bumper *(Chloroscombrus chrysurus)*												
Monofilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	1	0	0	0	0	
Multifilament												
1-5/8″ x 3-1/4″	0	0	0	0	0	0	0	0	0	0	0	
1-7/8″ x 3-3/4″	0	0	0	0	0	0	0	0	0	0	0	
2″ x 4″	0	0	0	0	0	0	0	0	0	0	0	

May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1981 Jan.	Feb.	Mar.	1979-80 Total	1980-81 Total	Proj. Total
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	1
0	0	0	0	0	1	0	0	0	0	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	1
0	0	0	0	0	0	0	0	0	0	0	1	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 3. Continued

	1979 Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1980 Jan.	Feb.	M
Remora *(Remora remora)*												
Monofilament												
1-5/8" x 3-1/4"	0	0	0	0	0	0	0	0	0	0	0	
1-7/8" x 3-3/4"	0	0	0	0	0	0	0	0	0	0	0	
2" x 4"	0	0	0	0	0	0	0	0	0	0	0	
Multifilament												
1-5/8" x 3-1/4"	0	0	0	0	0	0	0	0	0	0	0	
1-7/8" x 3-3/4"	0	0	0	0	0	0	0	0	0	0	0	
2" x 4"	0	0	0	0	0	0	0	0	0	0	0	
Spider Crab *(Libinia emarginata)*												
Monofilament												
1-5/8" x 3-1/4"	0	0	0	0	0	0	0	0	0	0	0	
1-7/8" x 3-3/4"	0	0	0	0	0	0	0	0	0	0	0	
2" x 4"	0	0	0	0	0	0	0	0	0	0	0	
Multifilament												
1-5/8" x 3-1/4"	0	0	0	0	0	0	0	0	0	0	0	
1-7/8" x 3-3/4"	0	0	0	0	0	0	0	0	0	0	0	
2" x 4"	0	0	0	0	0	0	0	0	0	0	0	

·.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1981 Jan.	Feb.	Mar.	1979-80 Total	1980-81 Total	Proj. Total
	0	0	0	0	0	0	1	0	0	0	0	0	1	1
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	0	0	1	1
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Gulf menhaden composed 6 percent of the total catch and were captured in greater numbers during the first year. Monofilament webbing captured almost 10 times the amount of Gulf menhaden as did nylon, and 1-5/8" bar mesh was the most efficient mesh size in each material (Table 3). The efficiency of each material decreased with an increase in mesh size, as it did for most species. Gulf menhaden were previously the 10th most abundant species taken in monofilament gill nets and 11th most abundant in nylon trammel nets in this area (Adkins et al. 1979).

Black drum occurred in the catch more often in monofilament nets than in nylon (approximately 3:1). A total of 142 fish were taken, comprising 3 percent of the catch. More black drum were recorded during the second year and were taken in larger mesh in monofilament nets (Table 3). However, the smallest mesh size captured greater numbers of black drum in the nylon net. Black drum were generally caught in greater numbers during autumn and spring months, November or December through May. Most of these fish were observed to be in spawning condition during this time and usually were found in schools over or around submerged reefs. Jannke (1971) reported that black drum apparently spawn in late fall and winter in the Everglades National Park, Florida, and larvae were taken from mid November to mid March. This condition was also observed in Louisiana waters in earlier studies by Adkins et al. (1979).

Many drum were observed following the nets, especially nylon nets, until the nets were partially lifted from the water. The drum, being so large, then simply rolled out of the net and escaped. In earlier studies, black drum were the third most abundant in monofilament gill nets and 12th in abundance in nylon trammel nets from January 1976 through December 1977 (Adkins et al. 1979). Different methods of fishing (strike vs straight-line) and different size of nets used probably account for the difference noted.

A total of 116 (2 percent of the total catch) Spanish mackerel were captured. Monofilament webbing was by far the most efficient gear, as almost 100 times more fish were taken in this material (Table 3). The most efficient mesh size was 1-5/8" bar in each material type. Spanish mackerel were conspicuously absent from the catch from December through March of each study year, and present in greater numbers from April through June, and again in October of each year.

Mihara et al. (1971) found catches of Spanish mackerel to be much greater in monofilament webbing than in multifilament and reported monofilament to be more efficient in their capture.

Thirty-two Spanish mackerel were captured in monofilament webbing during 1976-77 (Adkins et al. 1979), but none were captured in multifilament trammel nets, even though strike fishing was utilized. This indicates a specific efficiency of monofilament for this particular species. Avoidance of the nylon net by Spanish mackerel in clear water was observed many times while securing samples. They would simply swim along the net for a short distance and then quickly swim away.

Spot were usually encountered in schools, and were captured sporadically during the study (September and October 1979 and October 1980 in monofilament webbing; October 1979, August and October 1980 in nylon webbing). Materials were fairly equal in efficiency (75 vs 65), and 1-5/8" bar mesh was by far the most efficient mesh size. Spot composed 2 percent of the total catch. These results would indicate that a segment of the population attains a size rendering it capable of capture in the smaller mesh during late summer.

Of the remainder of the species captured, none composed more than one percent of the total catch, and most were captured only sporadically.

The other finfish about which controversy commonly exists is the red drum. Only 13 (0.2 percent) were captured, 10 of which were captured in nylon webbing. Of the 3 individuals captured in monofilament webbing, one was captured in each mesh size, thus no efficiency rate for mesh size was determined. Of those taken in nylon webbing, the most efficient mesh size was 1-7/8" bar, followed by 2" bar. Some fish were observed following the monofilament webbing but not becoming entangled; others bumped the net and pushed their way through or under the webbing. As this material was lighter than nylon, larger fish were observed doing this. Matlock and Weaver et al. (1978) also reported greater efficiencies from larger mesh sizes, as more red drum were taken in 3"stretched mesh nets, and heavier (larger) fish were captured in 6"stretched mesh. They stated gill net mesh sizes were also highly selective for certain sizes of red drum. Adkins et al. (1979) reported nylon trammel nets to be more efficient in capturing red drum than monofilament gill nets; the catch was 42 vs 9 individuals during a two-year study.

From the results of this and other studies, it is apparent that monofilament gill nets in mesh sizes of 2" bar and less are not an efficient gear for the capture of red drum.

Other species, such as spotted seatrout and Spanish mackerel, are highly susceptible to capture by this material and the smaller mesh (1-5/8" bar) was the most efficient mesh used. Nylon nets are either less efficient but useable in a similar mesh size (spotted seatrout), or not at all efficient, no matter what mesh size is used (Spanish mackerel).

Thirteen species were caught only in monofilament webbing; four species were taken in only nylon webbing. Although some species (cownose ray) were captured only three times, it was determined that monofilament webbing was more efficient than nylon; the most efficient mesh size was 1-5/8" bar.

EFFICIENCY PARAMETERS

Spotted Seatrout

Monofilament webbing was more efficient than nylon in capturing spotted seatrout, regardless of mesh size, with the 1-5/8″ bar webbing more efficient than larger meshes. In both monofilament and nylon webbing, efficiency (fish per net) decreased with an increase in mesh size (Table 4). Larger fish (both in length and weight) were captured in the larger mesh, with heavier fish being taken during the second study year. In monofilament webbing, the largest fish were taken in 2″ bar mesh (571 mm average length and 3.0 pounds average weight), and were captured in August 1980. The smallest individual spotted seatrout was also caught in 2" bar mesh in June 1980. It was 0.6 pounds in weight and 300 mm in length. The smallest average weight recorded for spotted seatrout was 1.3 pounds, taken in 1-5/8″ bar mesh nylon nets, followed by 1.4 pounds recorded from 1-5/8″ bar mesh monofilament webbing. These data agree with earlier findings by Adkins et al. (1979). Tabb (1960) reported an average size of 335 mm (SL) and 1.3 pounds for spotted seatrout taken in 3-1/8″ stretched mesh gill nets.

The size range of spotted seatrout caught in nylon webbing was 220 mm (0.5 pound) taken in 1-7/8″ bar mesh in April 1979 to 560 mm (3.7 pounds) captured in June 1980. Slightly larger average weights were recorded from nylon than monofilament webbing, and smaller average size fish were usually recorded during winter months in each material. Larger fish were generally taken in early spring months, preceding spawning; females in the catch greatly increased average sizes recorded at this time.

Futch (1970) reported females to grow faster than males, and grow to a larger size; maturity was usually attained by the third year when the fish were approximately 250 mm (10 inches) in length.

Moody (1950) found that females generally matured at 210-250 mm SL although 20 of 260 ripe females were less than 200 mm. Most did not spawn until 240-250 mm, or their third summer.

All females were mature at 270 mm and all males at 250 mm, with the smallest ripe female being 210 mm and the smallest ripe male 180 mm. These data were reported by Klima and Tabb (1959) from Apalachicola and Apalachee Bays, Florida.

These findings are similar to data gathered in Louisiana by Sundararaj and Suttkus (1962). If these data are applied to sizes of spotted seatrout taken in this and recent studies (Adkins et al. 1979), spotted seatrout smaller than spawning size were very few in number, if occurring at all. The smallest average size recorded was 365 mm, with the majority being larger. This implies that essentially all spotted seatrout taken in mesh sizes used were large enough to have spawned at least once.

In experiments in Lake Washington, near Seattle, it was determined that larger fish were captured in gill nets having smaller diameter filaments than in nets possesing larger (.133 mm vs. .267 mm) filaments. The difference was probably caused by the elasticity of the smaller filaments (Hansen 1974). Such was not the case in this study, although the species of fish taken no doubt affected results.

Results from this study were similar to those reported by Mahood (1974), who set monofilament gill nets of 2-7/8″ stretched mesh, and reported catching spotted seatrout ranging from 238 mm to 633 mm, with over 92 percent being between 303 mm and 428 mm. In this study, 1-5/8″ bar mesh yielded 482 spotted seatrout averaging 410 mm, ranging from 345 mm to 451 mm in individual and average sizes, respectively. Sizes in nylon nets, 1-5/8″ bar mesh, ranged from 360 mm to 484 mm in individual and average lengths, respectively, and averaged 395 mm for the two year period (Table 4).

In Texas, Matlock, Weaver et al. (1978) reported catching larger numbers of spotted seatrout in 3″ and 4″ stretched mesh gill nets, although heavier fish were taken in 4″ and 5″ stretched mesh gill nets. They also found the monthly average gill net catch of spotted seatrout and red drum to follow the same winter decline and spring increase as exhibited by all species combined. Their data agrees with data gathered in this study.

Additionally, average size of spotted seatrout taken was sporadic throughout the year, with average weight usually greater during early spring and summer months. This finding coincides with spawning activities, reflecting the presence of roe-carrying females in the population.

Gulf Menhaden

More Gulf Menhaden (a schooling fish) were captured in monofilament webbing than in nylon. The smaller mesh size (1-5/8″ bar) was more efficient in taking this fish than larger meshes, regardless of material type. Efficiency decreased as mesh size increased in each material. In all but one mesh (2″ bar) efficiency was greater during the first year, although larger fish were recorded the second year. A gradual increase in average length (183 mm - 255 mm) and average weight (0.1 pound - 0.5 pound) was recorded from August 1979 through December 1979 in monofilament webbing, 1-5/8″ bar mesh, and may indicate the growth rate of this fish (Table 4).

Black Drum

Black drum were taken in greater numbers during the second year, regardless of net type. Monofilament webbing was more efficient in their capture, and efficiency increased with an increase in mesh size (Table 4). Average size and average weight also increased similarly. In nylon webbing, the smallest mesh size (1-5/8″ bar) was most efficient in taking

Tab

Monthly listing of total caught, averag mesh size. Also shown are yearly tota 1979 through March 198

	1979 Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1980 Jan.	Feb.	Ma
Monofilament												
1-5/8″ x 3-1/4″												
Total Caught	0	1	0	1	99	9	19	2	2	1	0	0
Avg. Length	-	250	-	250	185	229	241	250	255	250	-	-
Avg. Weight	-	---	-	---	0.1	0.3	0.4	0.5	0.5	---	-	-
1-7/8″ x 3-3/4″												
Total Caught	0	0	0	1	40	4	4	0	0	0	0	0
Avg. Length	-	-	-	180	185	202	235	-	-	-	-	-
Avg. Weight	-	-	-	---	0.2	---	---	-	-	-	-	-
2″ x 4″												
Total Caught	0	0	2	1	4	0	0	0	0	0	0	0
Avg. Length	-	-	170	210	209	-	-	-	-	-	-	-
Avg. Weight	-	-	---	---	---	-	-	-	-	-	-	-
Multifilament												
1-5/8″ x 3-1/4″												
Total Caught	3	24	3	0	0	1	2	0	0	0	0	0
Avg. Length	140	173	258	-	-	100	242	-	-	-	-	-
Avg. Weight	---	0.1	0.3	-	-	---	---	-	-	-	-	-
1-7/8″ x 3-3/4″												
Total Caught	0	0	0	2	0	0	0	0	0	0	0	0
Avg. Length	-	-	-	235	-	-	-	-	-	-	-	-
Avg. Weight	-	-	-	---	-	-	-	-	-	-	-	-
2″ x 4″												
Total Caught	0	0	0	0	0	1	0	0	0	0	0	0
Avg. Length	-	-	-	-	-	240	-	-	-	-	-	-
Avg. Weight	-	-	-	-	-	---	-	-	-	-	-	-

Tabl

Monthly listing of total caught, average lengt mesh size. Also shown are yearly totals an through March 198

	1979 Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1980 Jan.	Feb.	Ma
Monofilament												
1-5/8″ x 3-1/4″												
Total Caught	2	0	0	0	1	0	1	1	0	0	0	0
Avg. Length	765	-	-	-	450	-	240	950	-	-	-	-
Avg. Weight	17.0	-	-	-	2.3	-	0.5	25.0	-	-	-	-
1-7/8″ x 3-3/4″												
Total Caught	0	0	0	0	0	0	0	1	1	2	0	0
Avg. Length	-	-	-	-	-	-	-	1000	690	560	-	-
Avg. Weight	-	-	-	-	-	-	-	33.0	12.0	8.1	-	-

**ngth and average weight, by material and
ıd project total for Gulf menhaden, April
ɔastal Study Area IV.**

									1981			1979-80	1980-81	Proj.
r.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Total	Total	Total
2	65	3	0	0	0	0	0	0	0	0	0	134	70	204
5	279	258	-	-	-	-	-	-	-	-	-	206	276	236
	0.6	0.5	-	-	-	-	-	-	-	-	-	0.2	0.6	0.3
0	5	1	0	0	0	0	0	0	0	0	0	49	6	55
-	285	290	-	-	-	-	-	-	-	-	-	190	286	201
-	0.7	0.5	-	-	-	-	-	-	-	-	-	0.2	0.7	0.2
0	22	1	0	1	0	0	0	0	0	0	0	7	24	31
-	308	185	-	200	-	-	-	-	-	-	-	198	299	276
-	0.6	---	-	---	-	-	-	-	-	-	-	---	0.6	0.6
0	0	0	0	0	0	2	0	0	0	0	0	33	2	35
-	-	-	-	-	-	245	-	-	-	-	-	180	245	184
-	-	-	-	-	-	---	-	-	-	-	-	0.2	---	0.2
0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
-	-	-	-	-	-	-	-	-	-	-	-	235	-	235
-	-	-	-	-	-	-	-	-	-	-	-	---	-	---
0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
-	-	-	-	-	-	-	-	-	-	-	-	240	-	240
-	-	-	-	-	-	-	-	-	-	-	-	---	-	---

**d average weight, by material and
ɔject total for black drum, April 1979
astal Study Area IV.**

									1981			1979-80	1980-81	Proj.
.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Total	Total	Total
0	2	1	0	0	0	0	3	5	1	0	4	5	16	21
-	257	255	-	-	-	-	912	829	940	-	786	634	733	709
-	1.0	0.5	-	-	-	-	27.7	21.4	23.0	-	18.7	12.3	18.2	16.8
4	3	0	0	0	0	0	17	0	2	0	12	4	38	42
7	753	-	-	-	-	-	770	-	800	-	725	702	750	746
4	22.3	-	-	-	-	-	17.6	-	20.5	-	14.6	15.3	17.0	16.9

Table 4. Continued

	1979 Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1980 Jan.	Feb.	M
2″ x 4″												
Total Caught	1	0	0	0	0	1	0	0	3	1	0	
Avg. Length	640	-	-	-	-	300	-	-	953	500	-	8
Avg. Weight	9.0	-	-	-	-	1.5	-	-	31.0	2.5	-	1
Multifilament												
1-5/8″x3-1/4″												
Total Caught	0	0	0	0	0	0	0	0	3	0	0	
Avg. Length	-	-	-	-	-	-	-	-	690	-	-	
Avg. Weight	-	-	-	-	-	-	-	-	11.8	-	-	
1-7/8″ x 3-3/4″												
Total Caught	0	0	0	0	0	0	0	0	1	0	0	
Avg. Length	-	-	-	-	-	-	-	-	650	-	-	
Avg. Weight	-	-	-	-	-	-	-	-	9.0	-	-	
2″ x 4″												
Total Caught	0	0	0	0	0	0	0	0	1	1	0	
Avg. Length	-	-	-	-	-	-	-	-	680	900	-	
Avg. Weight	-	-	-	-	-	-	-	-	9.5	35.0	-	

Tab

Monthly listing of total caught, avera
mesh size. Also shown are yearly tota
1979 through Mar

	1979 Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1980 Jan.	Feb.	M
Monofilament												
1-5/8″ x 3-1/4″												
Total Caught	1	2	8	0	1	1	1	0	0	0	0	
Avg. Length	480	570	470	-	510	510	410	-	-	-	-	
Avg. Weight	1.5	2.2	1.4	-	1.7	1.5	1.0	-	-	-	-	
1-7/8″ x 3-3/4″												
Total Caught	2	5	1	0	1	0	2	0	0	0	0	
Avg. Length	505	591	450	-	505	-	577	-	-	-	-	
Avg. Weight	1.7	2.6	1.0	-	1.7	-	2.5	-	-	-	-	
2″ x 4″												
Total Caught	6	3	0	1	2	0	0	0	0	0	0	
Avg. Length	582	537	-	500	542	-	-	-	-	-	-	
Avg. Weight	1.8	2.0	-	1.5	2.2	-	-	-	-	-	-	
Multifilament												
1-5/8″ x 3-1/4″												
Total Caught	1	0	1	0	0	0	0	0	0	0	0	
Avg. Length	570	-	500	-	-	-	-	-	-	-	-	
Avg. Weight	3.0	-	2.0	-	-	-	-	-	-	-	-	

May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1981 Jan.	Feb.	Mar.	1979-80 Total	1980-81 Total	Proj. Total
25	0	0	0	0	2	0	4	4	0	2	8	37	45
808	-	-	-	-	297	-	737	851	-	515	741	762	758
21.3	-	-	-	-	0.4	-	14.5	20.2	-	7.5	17.7	18.6	18.5
11	0	0	2	0	0	0	1	0	0	0	3	15	18
236	-	-	280	-	-	-	735	-	-	-	690	328	389
0.3	-	-	0.5	-	-	-	13.5	-	-	-	11.8	4.5	5.7
3	0	0	0	0	0	0	2	1	1	0	1	7	8
253	-	-	-	-	-	-	745	920	760	-	650	561	572
0.4	-	-	-	-	-	-	15.5	25.5	15.0	-	9.0	10.4	10.2
0	0	1	0	0	0	0	1	1	0	1	2	6	8
-	-	295	-	-	-	-	730	550	-	880	790	694	718
-	-	0.7	-	-	-	-	12.5	5.0	-	27.0	22.2	19.0	19.7

th and average weight, by material and project total for Spanish mackerel, April , Coastal Study Area IV.

May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1981 Jan.	Feb.	Mar.	1979-80 Total	1980-81 Total	Proj. Total
5	11	3	5	6	0	1	0	0	0	0	14	34	48
502	503	473	482	478	-	630	-	-	-	-	486	506	500
2.0	1.7	1.5	1.5	1.4	-	4.2	-	-	-	-	1.5	1.8	1.7
2	1	1	7	2	11	1	0	0	0	0	11	27	38
562	540	370	501	560	490	540	-	-	-	-	552	509	521
2.2	2.0	1.0	1.7	2.0	1.7	2.5	-	-	-	-	2.2	1.8	1.9
3	4	0	0	2	2	0	0	0	0	0	12	15	27
523	527	-	-	522	565	-	-	-	-	-	557	551	553
1.9	1.7	-	-	1.7	2.5	-	-	-	-	-	1.9	2.1	2.0
0	0	0	0	1	0	0	0	0	0	0	2	1	3
-	-	-	-	650	-	-	-	-	-	-	535	650	573
-	-	-	-	3.0	-	-	-	-	-	-	2.5	3.0	2.7

Table 4. Continued

	1979 Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1980 Jan.	Feb.	M
1-7/8″ x 3-3/4″												
Total Caught	0	0	0	0	0	0	0	0	0	0	0	
Avg. Length	-	-	-	-	-	-	-	-	-	-	-	
Avg. Weight	-	-	-	-	-	-	-	-	-	-	-	
2″ x 4″												
Total Caught	0	0	0	0	0	0	0	0	0	0	0	
Avg. Length	-	-	-	-	-	-	-	-	-	-	-	
Avg. Weight	-	-	-	-	-	-	-	-	-	-	-	

Tab

Monthly listing of total caught, averag
mesh size. Also shown are yearly tota
March 198

	1979 Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1980 Jan.	Feb.	M
Monofilament												
1-5/8″ x 3-1/4″												
Total Caught	0	0	1	0	0	26	15	10	0	0	0	
Avg. Length	-	-	240	-	-	236	234	238	-	-	-	
Avg. Weight	-	-	0.5	-	-	0.4	0.4	0.2	-	-	-	
1-7/8″ x 3-3/4″												
Total Caught	0	0	1	0	0	0	0	0	0	0	0	
Avg. Length	-	-	230	-	-	-	-	-	-	-	-	
Avg. Weight	-	-	0.5	-	-	-	-	-	-	-	-	
2″ x 4″												
Total Caught	0	0	0	0	0	0	0	0	0	0	0	
Avg. Length	-	-	-	-	-	-	-	-	-	-	-	
Avg. Weight	-	-	-	-	-	-	-	-	-	-	-	
Multifilament												
1-5/8″ x 3-1/4″												
Total Caught	0	1	0	0	1	0	22	0	0	0	0	
Avg. Length	-	125	-	-	230	-	218	-	-	-	-	
Avg. Weight	-	---	-	-	---	-	0.4	-	-	-	-	
1-7/8″ x 3-3/4″												
Total Caught	0	0	1	2	0	0	0	0	0	0	0	
Avg. Length	-	-	230	217	-	-	-	-	-	-	-	
Avg. Weight	-	-	0.5	---	-	-	-	-	-	-	-	
2″ x 4″												
Total Caught	0	0	0	0	0	0	0	0	0	0	0	
Avg. Length	-	-	-	-	-	-	-	-	-	-	-	
Avg. Weight	-	-	-	-	-	-	-	-	-	-	-	

May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1981 Jan.	Feb.	Mar.	1979-80 Total	1980-81 Total	Proj. Total
0	0	0	0	0	0	0	0	0	0	0	0	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
0	0	0	0	0	0	0	0	0	0	0	0	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-

ngth and average weight, by material and d project total for spot, April 1979 through astal Study Area IV.

May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1981 Jan.	Feb.	Mar.	1979-80 Total	1980-81 Total	Proj. Total
2	1	0	1	1	13	4	0	0	0	0	52	22	74
257	240	-	250	240	236	247	-	-	-	-	236	241	237
1.0	---	-	---	---	0.4	0.3	-	-	-	-	0.4	0.4	0.4
0	0	0	0	0	0	0	0	0	0	0	1	0	1
-	-	-	-	-	-	-	-	-	-	-	230	-	230
-	-	-	-	-	-	-	-	-	-	-	0.5	-	0.5
0	0	0	0	0	0	0	0	0	0	0	0	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	2	1	13	3	16	0	0	0	0	1	24	38	62
255	245	230	241	238	230	-	-	-	-	240	214	236	228
---	---	---	0.5	---	0.4	-	-	-	-	0.5	0.4	0.4	0.4
0	0	0	0	0	0	0	0	0	0	0	3	0	3
-	-	-	-	-	-	-	-	-	-	-	221	-	221
-	-	-	-	-	-	-	-	-	-	-	---	-	---
0	0	0	0	0	0	0	0	0	0	0	0	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-

Tab

Monthly listing of total caught, averag
mesh size. Also shown are yearly tota
April 1979 through Marc

	1979 Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1980 Jan.	Feb.	M
Monofilament												
1-5/8" x 3-1/4"												
Total Caught	0	1	1	0	0	2	1	0	0	0	0	
Avg. Length	-	160	190	-	-	125	140	-	-	-	-	
Avg. Weight	-	---	---	-	-	---	---	-	-	-	-	
1-7/8" x 3-3/4"												
Total Caught	0	3	0	0	7	2	0	0	0	0	0	
Avg. Length	-	160	-	-	184	165	-	-	-	-	-	
Avg. Weight	-	---	-	-	0.3	---	-	-	-	-	-	
2" x 4"												
Total Caught	0	4	2	1	1	1	0	0	0	0	0	
Avg. Length	-	136	170	185	170	190	-	-	-	-	-	
Avg. Weight	-	---	---	---	---	---	-	-	-	-	-	
Multifilament												
1-5/8" x 3-1/4"												
Total Caught	0	1	1	0	0	0	0	0	0	0	0	
Avg. Length	-	180	190	-	-	-	-	-	-	-	-	
Avg. Weight	-	---	---	-	-	-	-	-	-	-	-	
1-7/8" x 3-3/4"												
Total Caught	0	0	1	0	0	0	0	0	0	0	0	
Avg. Length	-	-	185	-	-	-	-	-	-	-	-	
Avg. Weight	-	-	---	-	-	-	-	-	-	-	-	
2" x 4"												
Total Caught	0	0	1	0	0	0	0	0	0	0	0	
Avg. Length	-	-	180	-	-	-	-	-	-	-	-	
Avg. Weight	-	-	---	-	-	-	-	-	-	-	-	

Tab

Monthly listing of total caught, avera
mesh size. Also shown are yearly tota
through March 19

	1979 Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1980 Jan.	Feb.	M
Monofilament												
1-5/8" x 3-1/4"												
Total Caught	0	0	0	0	0	0	0	8	0	0	0	
Avg. Length	-	-	-	-	-	-	-	218	-	-	-	
Avg. Weight	-	-	-	-	-	-	-	0.4	-	-	-	
1-7/8" x 3-3/4"												
Total Caught	0	0	0	1	1	0	0	4	0	0	0	
Avg. Length	-	-	-	215	380	-	-	462	-	-	-	4
Avg. Weight	-	-	-	---	2.0	-	-	4.5	-	-	-	[illegible]

ngth and average weight, by material and
nd project total for southern harvestfish,
)81, Coastal Study Area IV.

pr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1981 Jan.	Feb.	Mar.	1979-80 Total	1980-81 Total	Proj. Total
0	3	3	4	1	1	0	0	0	0	0	0	5	12	17
-	173	187	182	120	125	-	-	-	-	-	-	148	171	164
-	---	---	---	---	---	-	-	-	-	-	-	---	---	---
0	5	1	1	1	0	1	0	0	0	0	0	12	9	21
-	192	210	180	180	-	165	-	-	-	-	-	175	188	181
-	---	---	---	---	-	---	-	-	-	-	-	0.2	---	0.1
0	9	0	3	0	0	0	0	0	0	0	0	9	12	21
-	239	-	203	-	-	-	-	-	-	-	-	159	230	200
-	---	-	---	-	-	-	-	-	-	-	-	---	---	---
0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
-	-	-	-	-	-	-	-	-	-	-	-	185	-	185
-	-	-	-	-	-	-	-	-	-	-	-	---	-	---
0	2	0	0	0	1	0	0	0	0	0	0	1	3	4
-	220	-	-	-	140	-	-	-	-	-	-	185	193	191
-	0.2	-	-	-	---	-	-	-	-	-	-	---	0.2	0.2
	0	0	0	0	0	0	0	0	0	0	0	1	2	2
	-	-	-	-	-	-	-	-	-	-	-	180	190	185
	-	-	-	-	-	-	-	-	-	-	-	---	0.1	0.1

gth and average weight, by material and
d project total for sheepshead, April 1979
astal Study Area IV.

May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1981 Jan.	Feb.	Mar.	1979-80 Total	1980-81 Total	Proj. Total
0	0	0	2	0	1	0	1	0	0	0	8	4	12
-	-	-	435	-	210	-	410	-	-	-	218	372	270
-	-	-	---	-	2.7	-	2.5	-	-	-	0.4	2.6	1.0
0	0	0	1	0	0	1	0	0	0	1	7	3	10
-	-	-	440	-	-	330	-	-	-	465	412	412	412
-	-	-	3.5	-	-	1.0	-	-	-	4.0	4.0	2.8	3.2

Table 4. Continued

	1979 Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1980 Jan.	Feb.	M
2″ x 4″												
Total Caught	1	0	0	0	0	0	0	0	0	0	0	
Avg. Length	420	-	-	-	-	-	-	-	-	-	-	
Avg. Weight	2.0	-	-	-	-	-	-	-	-	-	-	
Multifilament												
1-5/8″ x 3-1/4″												
Total Caught	0	0	0	0	0	0	0	2	0	0	0	
Avg. Length	-	-	-	-	-	-	-	315	-	-	-	
Avg. Weight	-	-	-	-	-	-	-	---	-	-	-	
1-7/8″ x 3-3/4″												
Total Caught	0	0	0	0	0	0	0	1	1	0	0	
Avg. Length	-	-	-	-	-	-	-	240	215	-	-	
Avg. Weight	-	-	-	-	-	-	-	---	0.5	-	-	
2″ x 4″												
Total Caught	0	0	0	0	0	0	0	12	0	1	0	
Avg. Length	-	-	-	-	-	-	-	375	-	380	-	
Avg. Weight	-	-	-	-	-	-	-	1.8	-	2.2	-	

Tab
Monthly listing of total caught, averag
mesh size. Also shown are yearly tota
1979 through Marc

	1979 Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	1980 Feb.	M
Monofilament												
1-5/8″ x 3-1/4″												
Total Caught	0	0	1	3	1	0	0	0	0	0	0	
Avg. Length	-	-	270	257	190	-	-	-	-	-	-	
Avg. Weight	-	-	---	---	---	-	-	-	-	-	-	
1-7/8″ x 3-3/4″												
Total Caught	1	0	0	1	1	2	0	0	0	0	0	
Avg. Length	190	-	-	250	270	110	-	-	-	-	-	2
Avg. Weight	---	-	-	---	---	---	-	-	-	-	-	
2″ x 4″												
Total Caught	0	0	0	0	3	0	0	0	0	0	0	
Avg. Length	-	-	-	-	317	-	-	-	-	-	-	
Avg. Weight	-	-	-	-	---	-	-	-	-	-	-	
Multifilament												
1-5/8″ x 3-1/4″												
Total Caught	0	0	7	0	0	0	0	0	0	1	0	
Avg. Length	-	-	299	-	-	-	-	-	-	245	-	3
Avg. Weight	-	-	---	-	-	-	-	-	-	---	-	

May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1981 Jan.	Feb.	Mar.	1979-80 Total	1980-81 Total	Proj. Total
0	0	0	7	0	0	0	0	1	0	0	1	8	9
-	-	-	410	-	-	-	-	235	-	-	420	388	392
-	-	-	2.9	-	-	-	-	0.2	-	-	2.0	2.6	2.5
0	0	0	0	0	0	0	0	1	0	0	2	1	3
-	-	-	-	-	-	-	-	410	-	-	315	410	347
-	-	-	-	-	-	-	-	3.0	-	-	---	3.0	2.5
0	0	0	0	1	1	0	0	0	0	0	2	3	5
-	-	-	-	460	220	-	-	-	-	-	227	325	286
-	-	-	-	3.5	1.2	-	-	-	-	-	0.5	1.9	1.6
0	0	7	1	0	0	0	0	0	0	0	13	8	21
-	-	364	420	-	-	-	-	-	-	-	375	371	374
-	-	1.8	3.0	-	-	-	-	-	-	-	1.8	1.9	1.9

gth and average weight, by material and d project total for southern flounder, April 31, Coastal Study Area IV.

pr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1981 Jan.	Feb.	Mar.	1979-80 Total	1980-81 Total	Proj. Total
	0	1	0	0	0	0	0	0	0	0	0	5	2	7
	-	270	-	-	-	-	-	-	-	-	-	246	255	249
	-	---	-	-	-	-	-	-	-	-	-	---	---	---
	1	0	0	0	0	0	0	0	0	0	0	6	1	7
	245	-	-	-	-	-	-	-	-	-	-	200	245	206
	1.0	-	-	-	-	-	-	-	-	-	-	---	1.0	---
	0	0	0	1	0	0	0	0	0	0	0	3	1	4
	-	-	-	300	-	-	-	-	-	-	-	317	300	313
	-	-	-	---	-	-	-	-	-	-	-	---	---	---
	0	0	0	1	2	0	0	0	0	0	0	9	3	12
	-	-	-	170	240	-	-	-	-	-	-	294	217	275
	-	-	-	---	---	-	-	-	-	-	-	0.7	---	---

Table 4. Continued

	1979 Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1980 Jan.	Feb.	M
1-7/8" x 3-3/4"												
Total Caught	0	0	0	1	0	0	0	0	0	0	0	
Avg. Length	-	-	-	225	-	-	-	-	-	-	-	
Avg. Weight	-	-	-	0.5	-	-	-	-	-	-	-	
2" x 4"												
Total Caught	0	0	0	4	0	0	0	0	0	0	0	
Avg. Length	-	-	-	262	-	-	-	-	-	-	-	
Avg. Weight	-	-	-	0.5	-	-	-	-	-	-	-	

Tabl

Monthly listing of total caught, averag
mesh size. Also shown are yearly tota
1979 through Marc

	1979 Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1980 Jan.	Feb.	Ma
Monofilament												
1-5/8" x 3-1/4"												
Total Caught	1	5	0	0	0	1	0	0	0	0	0	
Avg. Length	600	406	-	-	-	440	-	-	-	-	-	
Avg. Weight	6.0	1.2	-	-	-	---	-	-	-	-	-	
1-7/8" x 3-3/4"												
Total Caught	1	1	1	0	0	0	0	0	0	0	0	
Avg. Length	350	570	550	-	-	-	-	-	-	-	-	
Avg. Weight	2.0	3.0	3.5	-	-	-	-	-	-	-	-	
2" x 4"												
Total Caught	1	9	0	0	1	0	0	0	0	0	0	
Avg. Length	600	514	-	-	475	-	-	-	-	-	-	
Avg. Weight	6.0	---	-	-	1.5	-	-	-	-	-	-	
Multifilament												
1-5/8" x 3-1/4"												
Total Caught	0	0	0	0	0	0	0	0	0	0	0	
Avg. Length	-	-	-	-	-	-	-	-	-	-	-	
Avg. Weight	-	-	-	-	-	-	-	-	-	-	-	
1-7/8" x 3-3/4"												
Total Caught	0	0	0	0	0	0	0	0	0	0	0	
Avg. Length	-	-	-	-	-	-	-	-	-	-	-	
Avg. Weight	-	-	-	-	-	-	-	-	-	-	-	
2" x 4"												
Total Caught	0	0	0	0	0	0	0	0	0	0	0	
Avg. Length	-	-	-	-	-	-	-	-	-	-	-	
Avg. Weight	-	-	-	-	-	-	-	-	-	-	-	

May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1981 Jan.	Feb.	Mar.	1979-81 Total	1980-81 Total	Proj. Total
3	0	0	0	3	1	0	1	0	0	0	1	8	9
290	-	-	-	240	255	-	240	-	-	-	225	261	257
---	-	-	-	---	0.2	-	0.2	-	-	-	0.5	0.2	0.5
1	0	0	0	1	0	0	0	0	0	0	4	3	7
250	-	-	-	270	-	-	-	-	-	-	262	258	261
---	-	-	-	0.5	-	-	-	-	-	-	0.5	0.7	0.6

gth and average weight, by material and l project total for gafftopsail catfish, April 1, Coastal Study Area IV.

May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1981 Jan.	Feb.	Mar.	1979-80 Total	1980-81 Total	Proj. Total
1	1	1	0	0	0	0	0	0	0	0	7	4	11
590	270	450	-	-	-	-	-	-	-	-	439	440	439
3.0	---	1.5	-	-	-	-	-	-	-	-	1.7	1.5	1.6
0	2	1	4	0	0	0	0	0	0	0	3	10	13
-	245	410	442	-	-	-	-	-	-	-	490	421	437
-	---	1.5	1.6	-	-	-	-	-	-	-	2.8	1.9	2.2
6	0	0	1	1	0	0	0	0	0	0	11	8	19
439	-	-	530	490	-	-	-	-	-	-	518	457	492
1.7	-	-	3.0	1.5	-	-	-	-	-	-	2.6	1.8	2.3
0	0	0	0	0	0	0	0	0	0	0	0	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
0	0	0	0	0	0	0	0	0	0	0	0	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
0	1	1	0	0	0	0	0	0	0	0	0	2	2
-	460	440	-	-	-	-	-	-	-	-	-	450	450
-	2.0	1.5	-	-	-	-	-	-	-	-	-	1.7	1.7

Tab

Monthly listing of total caught, avera
mesh size. Also shown are yearly tota
1979 through Mar

	1979 Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1980 Jan.	Feb.
Monofilament											
1-5/8" x 3-1/4"											
Total Caught	5	8	0	13	9	4	15	34	1	9	2
Avg. Length	420	392	0	390	404	389	406	377	345	408	427
Avg. Weight	1.6	1.2	0	1.3	1.1	1.1	1.3	1.1	1.0	1.4	1.5
1-7/8" x 3-3/4"											
Total Caught	11	0	1	1	2	2	5	1	5	42	7
Avg. Length	409	-	455	440	385	365	422	410	427	461	477
Avg. Weight	2.1	-	2.0	2.0	1.2	0.9	1.5	1.7	1.6	1.8	2.3
2" x 4"											
Total Caught	5	0	0	0	1	4	3	0	0	0	0
Avg. Length	494	-	-	-	380	402	422	-	-	-	-
Avg. Weight	2.7	-	-	-	0.8	1.4	1.8	-	-	-	-
Multifilament											
1-5/8" x 3-1/4"											
Total Caught	7	25	18	12	2	0	31	16	2	6	0
Avg. Length	414	398	405	407	380	-	381	381	382	382	-
Avg. Weight	1.4	1.0	1.2	1.3	1.2	-	1.1	1.2	1.2	1.2	-
1-7/8" x 3-3/4"											
Total Caught	1	3	5	10	1	0	4	1	16	1	0
Avg. Length	220	405	510	426	490	-	465	360	462	450	-
Avg. Weight	0.5	1.3	3.5	1.8	2.5	-	1.9	1.0	2.2	2.0	-
2" x 4"											
Total Caught	7	3	1	1	0	0	3	1	0	1	0
Avg. Length	463	462	485	380	-	-	387	280	-	330	-
Avg. Weight	2.3	2.0	2.5	1.5	-	-	1.4	0.5	-	0.7	-

Tal

Monthly listing of total caught, avera
mesh size. Also shown are yearly tot
through March 19

	1979 Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1980 Jan.	Feb.
Monofilament											
1-5/8"x 3-1/4"											
Total Caught	0	0	0	1	0	0	0	0	0	0	0
Avg. Length	-	-	-	130	-	-	-	-	-	-	-
Avg. Weight	-	-	-	---	-	-	-	-	-	-	-
1-7/8" x 3-3/4"											
Total Caught	0	0	0	0	0	0	0	0	0	0	0
Avg. Length	-	-	-	-	-	-	-	-	-	-	-
Avg. Weight	-	-	-	-	-	-	-	-	-	-	-

gth and average weight, by material and d project total for spotted seatrout, April 1, Coastal Study Area IV.

May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1981 Jan.	Feb.	Mar.	1979-80 Total	1980-81 Total	Proj. Total
102	28	8	11	2	105	51	11	12	1	22	112	370	482
393	396	403	451	400	438	426	415	400	410	401	396	414	410
1.4	1.5	1.5	1.9	1.4	1.7	1.8	1.6	1.3	2.0	1.3	1.3	1.6	1.4
31	3	4	22	3	60	21	1	1	0	2	94	155	249
435	397	495	439	433	459	431	455	465	-	442	449	448	448
1.9	1.2	2.4	2.0	1.7	2.2	2.0	2.0	2.0	-	2.1	1.9	2.1	2.0
7	1	2	9	1	38	3	6	12	0	6	16	85	101
388	300	460	571	490	446	488	499	474	-	450	434	463	458
1.6	0.6	2.7	3.0	2.5	1.8	2.7	3.0	2.0	-	2.1	1.9	2.1	2.1
10	6	6	9	19	21	70	1	0	1	8	123	172	295
423	388	463	412	378	392	387	375	-	360	380	396	397	396
1.7	1.6	2.2	1.5	1.2	1.2	1.2	1.2	-	1.0	1.2	1.2	1.3	1.3
5	3	4	1	2	8	12	0	0	1	1	48	64	112
443	473	448	440	485	452	443	-	-	470	380	451	459	456
2.0	2.2	2.1	2.0	2.2	2.1	1.8	-	-	2.5	1.2	2.2	2.2	2.2
0	1	1	0	1	1	1	0	0	0	0	18	15	33
-	560	485	-	460	430	440	-	-	-	-	431	479	453
-	3.7	3.0	-	1.5	1.5	2.0	-	-	-	-	1.9	2.6	2.2

gth and average weight, by material and d project total for spadefish, April 1979 astal Study Area IV.

May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1981 Jan.	Feb.	Mar.	1979-80 Total	1980-81 Total	Proj. Total
0	0	0	1	0	1	0	0	0	0	0	1	2	3
-	-	-	120	-	110	-	-	-	-	-	130	115	120
-	-	-	---	-	---	-	-	-	-	-	---	---	---
1	0	0	1	1	0	0	0	0	0	0	0	3	3
140	-	-	110	120	-	-	-	-	-	-	-	123	123
---	-	-	---	---	-	-	-	-	-	-	-	---	---

Table 4. Continued

	1979 Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1980 Jan.	Feb.	M
2″ x 4″												
Total Caught	0	0	0	1	0	0	0	0	0	0	0	
Avg. Length	-	-	-	160	-	-	-	-	-	-	-	
Avg. Weight	-	-	-	---	-	-	-	-	-	-	-	
Multifilament												
1-5/8″ x 3-1/4″												
Total Caught	0	0	0	0	1	0	0	0	0	0	0	
Avg. Length	-	-	-	-	110	-	-	-	-	-	-	
Avg. Weight	-	-	-	-	---	-	-	-	-	-	-	
1-7/8″ x 3-3/4″												
Total Caught	0	0	6	0	0	0	0	0	0	0	0	
Avg. Length	-	-	134	-	-	-	-	-	-	-	-	
Avg. Weight	-	-	0.2	-	-	-	-	-	-	-	-	
2″ x 4″												
Total Caught	0	0	1	0	0	0	0	0	0	0	0	
Avg. Length	-	-	180	-	-	-	-	-	-	-	-	
Avg. Weight	-	-	---	-	-	-	-	-	-	-	-	

Tabl
Monthly listing of total caught, averag
mesh size. Also shown are yearly tota
through March 198

	1979 Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1980 Jan.	Feb.	M
Monofilament												
1-5/8″ x 3-1/4″												
Total Caught	0	0	0	0	0	0	0	0	0	0	0	
Avg. Length	-	-	-	-	-	-	-	-	-	-	-	
Avg. Weight	-	-	-	-	-	-	-	-	-	-	-	
1-7/8″ x 3-3/4″												
Total Caught	0	0	0	0	0	0	0	0	0	0	0	
Avg. Length	-	-	-	-	-	-	-	-	-	-	-	
Avg. Weight	-	-	-	-	-	-	-	-	-	-	-	
2″ x 4″												
Total Caught	0	0	0	0	0	0	0	0	0	0	0	
Avg. Length	-	-	-	-	-	-	-	-	-	-	-	1
Avg. Weight	-	-	-	-	-	-	-	-	-	-	-	3
Multifilament												
1-5/8″ x 3-1/4″												
Total Caught	0	0	0	0	0	0	0	0	0	0	0	
Avg. Length	-	-	-	-	-	-	-	-	-	-	-	
Avg. Weight	-	-	-	-	-	-	-	-	-	-	-	

May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1981 Jan.	Feb.	Mar.	1979-80 Total	1980-81 Total	Proj. Total
0	0	0	1	0	0	0	0	0	0	0	0	1	1
-	-	-	530	-	-	-	-	-	-	-	-	530	530
-	-	-	3.7	-	-	-	-	-	-	-	-	3.7	3.7
0	0	1	0	0	0	0	0	0	0	0	0	1	1
-	-	240	-	-	-	-	-	-	-	-	-	240	240
-	-	0.2	-	-	-	-	-	-	-	-	-	0.2	0.2
0	0	0	0	0	0	0	0	0	0	0	1	0	1
-	-	-	-	-	-	-	-	-	-	-	1000	-	1000
-	-	-	-	-	-	-	-	-	-	-	35.0	-	35.0
0	0	1	0	0	0	0	0	0	0	0	0	2	2
-	-	530	-	-	-	-	-	-	-	-	-	705	705
-	-	3.5	-	-	-	-	-	-	-	-	-	15.5	15.5

gth and average weight, by material and d project total for red drum, April 1979 astal Study Area IV.

May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1981 Jan.	Feb.	Mar.	1979-80 Total	1980-81 Total	Proj. Total
0	0	2	1	0	0	0	1	0	0	0	1	4	5
-	-	480	310	-	-	-	395	-	-	-	390	416	411
-	-	2.7	0.5	-	-	-	1.5	-	-	-	1.5	1.8	1.8
0	0	2	0	0	0	0	0	0	0	0	1	2	3
-	-	500	-	-	-	-	-	-	-	-	410	500	470
-	-	3.0	-	-	-	-	-	-	-	-	1.5	3.0	2.5
0	0	0	1	0	1	0	0	0	0	0	1	2	3
-	-	-	190	-	130	-	-	-	-	-	160	160	160
-	-	-	---	-	---	-	-	-	-	-	---	---	---
1	1	1	1	5	0	0	0	0	0	0	1	9	10
110	150	95	100	113	-	-	-	-	-	-	110	113	113
---	---	--	---	---	-	-	-	-	-	-	---	---	---

Table 4. Continued

	1979									1980		
	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	M
1-7/8″ x 3-3/4″												
Total Caught	0	0	0	0	0	0	1	0	0	0	0	
Avg. Length	-	-	-	-	-	-	390	-	-	-	-	
Avg. Weight	-	-	-	-	-	-	1.5	-	-	-	-	
2″ x 4″												
Total Caught	0	0	0	0	0	0	0	1	0	0	0	
Avg. Length	-	-	-	-	-	-	-	410	-	-	-	
Avg. Weight	-	-	-	-	-	-	-	1.5	-	-	-	

May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1981 Jan.	Feb.	Mar.	1979-80 Total	1980-81 Total	Proj. Total
0	1	3	0	1	1	0	0	0	0	0	6	6	12
-	140	147	-	140	110	-	-	-	-	-	133	138	136
-	---	0.2	-	---	---	-	-	-	-	-	0.2	0.1	0.1
0	0	1	4	6	0	0	0	0	0	0	1	11	12
-	-	150	125	127	-	-	-	-	-	-	180	128	132
-	-	---	---	0.1	-	-	-	-	-	-	---	0.1	---

black drum, although average size and average weight increased in the same manner as those caught in monofilament webbing. The largest individual black drum recorded weighed 50 pounds and was 1,030 mm in length. The smallest average-sized animals were 236 mm long and weighed an average of 0.3 pound (Table 4). Generally, black drum were more abundant during fall and winter months in each material and in all mesh sizes. They were usually also larger and heavier during this time. Very few black drum were gilled; most were captured by entanglement.

Spanish Mackerel

Monofilament webbing was significantly more efficient in the capture of Spanish mackerel than nylon webbing; the catch during the two-year study was 113 vs 3 (Table 4). The 1-5/8" bar mesh in each material type was the most efficient size for this fish's capture, with an increase in both average size and average weight being recorded as the mesh size increased. Pristas and Trent (1978) reported Spanish mackerel taken in monofilament gill nets to range in size from 285 mm to 610 mm, FL, being most abundant in spring, summer, and fall, peaking in March, June, and October, while the largest fish were taken in May. In this study the largest individual fish taken was 650 mm, TL, while the smallest was 370 mm. Catch was greatest during June and October 1980, with the majority of the catch occurring from April to October of each year. As Pristas and Trent (1978) used mesh sizes from 2.5" to 5.0" stretched, slightly larger sizes encountered during this study probably resulted from differences in mesh sizes.

Generally, heavier fish were recorded during April and May and October or November of each year. Spanish mackerel were absent from the catch from December through March.

Spot

Monofilament webbing was more efficient in capturing spot than nylon, and the efficiency of the 1-5/8" bar panel was greater than the larger sizes. All captured were smaller fish; 257 mm was the largest average size recorded for all mesh sizes and gear. The smallest individual measured was 125 mm, TL, while the heaviest average weight recorded was 1.0 pound in May 1980 (Table 4).

Southern Harvestfish

Southern harvestfish were taken in all mesh sizes and in both materials. Monofilament was more efficient than nylon, and the two larger mesh sizes were the most efficient. An increase in average length of animals was recorded as the mesh size increased in monofilament webbing, but this trend was not evident in nylon webbing (Table 4). These fish were more numerous in the catch during the warmer months of May through September.

Sheepshead

Another fish occurring sporadically was sheepshead. Monofilament webbing was only slightly more efficient in capturing sheepshead, 31 vs 29 (Table 4). Although the smallest mesh size in monofilament webbing was most efficient for that material, the largest (2"bar) mesh in nylon webbing was most efficient. Because of entanglement characteristics caused by the heavy dorsal spines and teeth of the sheepshead, no trend of increasing size or weight with an increase in mesh size was noticed. An average weight of 4.5 pounds was recorded in November 1979, and the smallest average length and weight was recorded from 1-7/8" bar monofilament; the smallest average size individuals were captured by 1-5/8" bar monofilament webbing (Table 4). Sheepshead generally occurred more frequently from November to March.

Southern Flounder

Southern flounder were captured more efficiently by nylon webbing and in the smallest mesh of this material. Although sporadic capture was recorded, frequency was usually greater during summer months (Table 4). The largest average length for flounder was recorded from 2" bar monofilament mesh; 1-5/8" bar mesh yielded the larger size in nylon webbing. In all but one instance, more flounder were taken during the first year. It might be that nylon webbing, being heavier, laid on the bottom more, thus entangling and gilling more flounder than the lighter monofilament webbing.

Gafftopsail Catfish

Gafftopsail catfish are generally considered commercial species and are highly prized as table fare by many saltwater anglers. Monofilament webbing was the most efficient webbing used in capturing this fish, and the largest mesh size was the most efficient of the three sizes tested. The 2" bar mesh was also the most efficient in nylon webbing (Table 4). Larger average size fish, both length and weight, were captured by the largest mesh sizes. These fish were as seasonal in catch as Spanish mackerel, being present from April to September of each year and absent the remainder of the time. They ranged in size from two 6-pound, 600 mm specimens taken in April 1979 to two individuals averaging 245 mm caught in June 1980 (Table 4).

Atlantic Spadefish

Among the 10 most numerous species taken was Atlantic spadefish. Nylon webbing was most efficient

in their capture, and larger meshes were more efficient than smaller mesh. A general increase in length of fish was recorded as mesh size increased, although the majority of the animals were too small to yield a weight. These fish were seasonal, occurring in the catch only from May to October. More specimens were recorded during the second year, probably because of the increase in average salinity recorded throughout the area.

Red Drum

Red drum, though not one of the 10 most numerous species captured, are very popular and are often the subject of disagreement among users. Nylon gill nets were more efficient than monofilament nets in capturing red drum; 1-7/8" bar mesh was the most efficient used (Table 4). The largest red drum taken was a 35 pound fish, 1,000 mm in length. The smallest weighed 0.2 pounds and was 240 mm in length. More fish were taken in July and during warmer months (March through August) of each year. Historically, in the study area, red drum have been captured most efficiently in nylon trammel nets. Adkins et al. (1979) found nylon trammel nets to be much more efficient in the capture of this animal. All except the smaller (less than 5 pounds) red drum were captured by entanglement rather than by gilling. Many larger fish escaped because of the inability to gill them.

GONADAL STAGES AND DEVELOPMENT

Adkins et al. (1979) reported stages of beginning development from January to March in spotted seatrout, further development during March, and spawning and spent fish from April through October. They also reported that a sharp buildup of gravid females occurred shortly before each full moon and that spent females were found shortly after the full moon.

To substantiate these earlier data, a maximum of 50 spotted seatrout from each sample were examined to determine the stage of gonadal development. The sexual development scale described by Guest and Gunter (1958) was used to ascertain stages.

So that spawning periods could be more clearly illustrated, gonadal stages were "lumped", i.e., stages 1 and 6 were considered to be the resting and spent stage; stages 2 and 3 development and prespawn stages; and stages 4 and 5 spawning stages. All stations were considered as a unit, although few spawning stage fish were taken from Stations E-1 and W-1.

Resting stage fish were recorded during each month except April 1980. From April or May to August of each year, approximately 10 percent of the spotted seatrout examined were in this category. An increase was recorded in September, and from October to February, almost all spotted seatrout examined were in the spent and resting stage. During March, a sharp decline in this stage was recorded (Figure 4). Tucker (1981) reported female trout to be spent by August 26; males were all spent by September 25.

Peak catches of stage 2 and 3 fish were recorded during April 1979, April 1980, and March 1981. The earlier occurrence during 1981 was most probably due to the very mild winter. Fish of this stage occurred until November 1979 and October 1980, with peaks recorded during warmer months. Spotted seatrout exhibiting maturation stages were generally absent in the catch during cooler months (November through February) of each year.

Spawning fish were taken in large numbers during warmer months (April through September) of each year. Hein and Shepard (1979) reported a spawning peak in May and a smaller peak in July. During October, this stage fish essentially became nonexistent in the catch and remained very low to absent until the spring increase, normally during March or April. In the Chesapeake Bay Area, Tucker (1981) found ripe females in mid-May, with males appearing ripe in late June.

The examination of gonadal data revealed a ripening of gonads during March of each year, spawning peaks from May through September, and spent or resting fish from October through March. Some minor variations were noted and were thought to be caused by temperature fluctuations. Hein and Shepard (1979) found that temperature and photoperiod appeared to be the two most important exogenous factors influencing spawning. Since photoperiod is least variable, temperature would appear to be the most important catalyst in early spawning activity. Additionally, spawning peaks were observed to be directly correlated to the full moon of each month, as previously reported by Mahood (1974) and Adkins et al (1979).

The majority of the fish taken were females; only 117 males (vs 1,090 females) were caught and examined. Although other spotted seatrout were caught and not examined, the sex ratio would probably remain the same (approximately 1:10). Size of the individual fish affects these findings also, as many males may be too small for capture with the webbing used. Male spotted seatrout ranged from 230 mm to 560 mm; females varied from 220 mm to 610 mm. Although the range was not that greatly different, most males averaged significantly smaller in size than females. These data agree with findings in Mississippi, as Etzold and Christmas (1979) reported 8 to 13 inch fish (203.2 to 330.2 mm, SL) to make up the majority of the spawning stock in the area studied.

Larger fish were taken from southern stations (especially W-3) whereas northern stations yielded smaller fish. Hein and Shepard (1979) reported similar results. In Texas, spotted seatrout caught at shoreline and pass stations were much larger than those taken at open water stations (Matlock, Weaver, et al. 1978). As reported by Tabb (1966), Rogillio (1975), and Hein and Shepard (1979), males were found to emit sounds upon handling. These sounds were very similar to croaking sounds produced by the Atlantic croaker and were noted only in males.

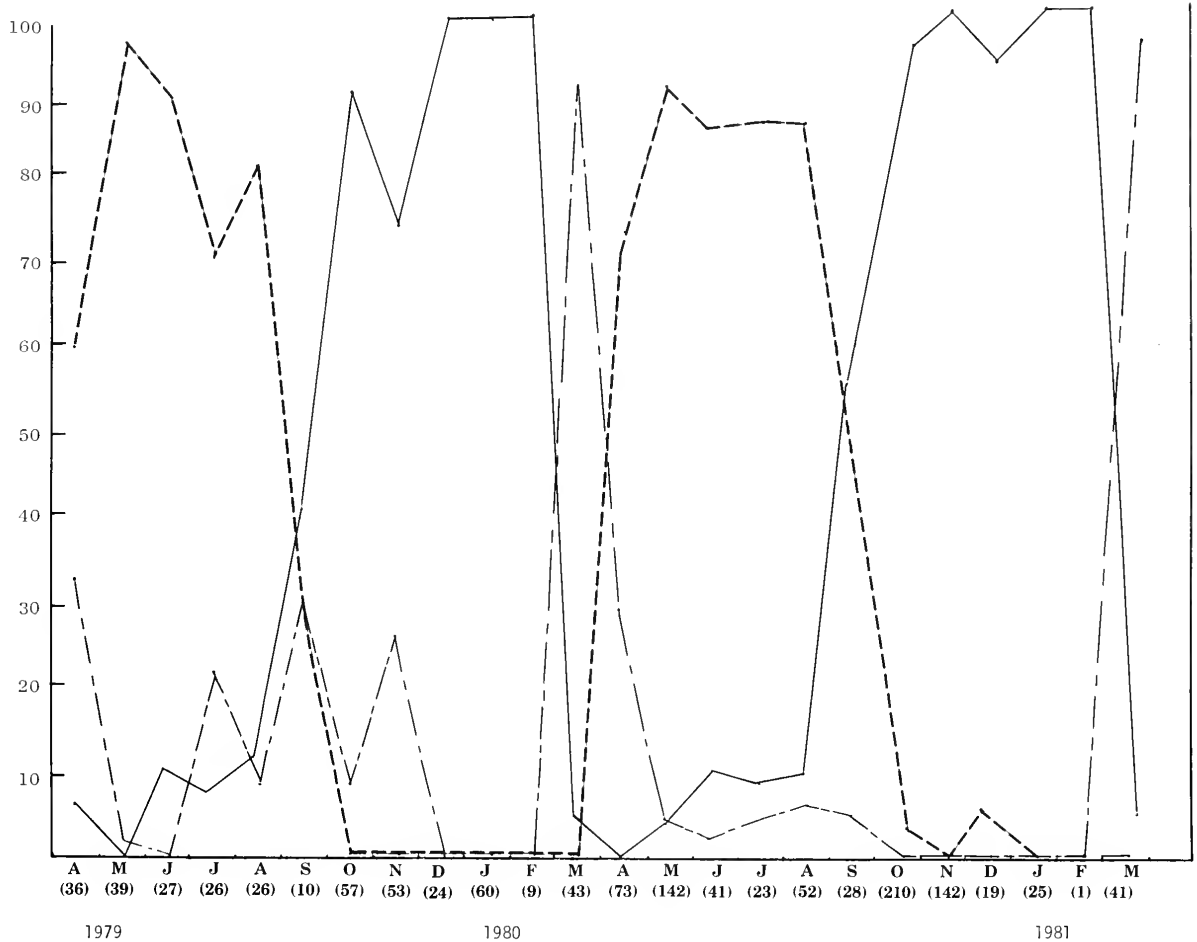

Figure 4. Gonadal stages of spotted seatrout expressed in percentages, by month, April 1979 through March 1981, Coastal Study Area IV. Numbers examined appear in parentheses under month.

Stages 1 & 6 ————————

Stages 2 & 3 —— – —— – ——

Stages 4 & 5 – – – – – – – –

SUPPLEMENTAL SAMPLES

Several sets were made in various locations in Coastal Study Area IV whenever time permitted. Nylon and monofilament nets were sewn together so that a 200′ section of 1-5/8″ bar mesh by 10′ section of monofilament was followed by a similar section of nylon, another section of monofilament, and another section of nylon. The total net was 800′ x 10′, comprised of 1-5/8″ bar webbing of alternating material types. In presenting these data, only numbers and species are presented, to more effectively compare the efficiency of these nets when fished as a single unit. This net was fished in the same manner as stated in the Material and Methods section. All animals captured were worked in the same manner except that only spotted seatrout were weighed.

Monofilament nets captured more species and also more individuals than nylon nets. Some animals, i.e., Gulf menhaden and spot were captured in significant numbers at only one time. In Texas studies, Gulf menhaden were the most abundant non-game species taken (Matlock, Weaver et al. 1978), thus indicating this species to be susceptible to gill netting.

Spanish mackerel were caught at only one location and only one time in the nylon nets. Except for this catch, they were not recorded from the nylon nets. Pristas and Trent (1977) reported Spanish mackerel catch efficiencies to be higher for monofilament webbing than nylon webbing.

Spotted seatrout were caught in monofilament nets at a much greater ratio (approximately 4:1) than in nylon nets. At times, few spotted seatrout were taken in nylon panels but were quite numerous in the monofilament panel immediately adjacent. It was theorized that the fish were avoiding the nylon net by sight and that they followed along the net until the monofilament panel was encountered. As this panel was less visible, the fish attempted to escape and were gilled. Hansen (1978) reported that sockeye salmon also tended to lead along multifilament and then to dart into monofilament panels, so that a large number of fish would be caught where the panels met. He also reported that in those samples, the size of fish was greater in monofilament than multifilament; over 4,000 fish were sampled.

Catches were generally greater in monofilament than in nylon nets for all fishes recorded; only southern harvestfish were taken in greater numbers in nylon nets. Pristas and Trent (1977) reported similar results, as 8 of the 12 most abundant species were captured in greater numbers in monofilament webbing.

Slightly heavier spotted seatrout were recorded from nylon nets than monofilament nets. The difference was, however, very slight (Table 5).

Table 5.
Total catch in 11 supplemental sets, Coastal Study Area IV, April 1979 through March 1981. Also shown is the average weight for spotted seatrout taken.

Monofilament Net		Multifilament Net	
Species	**No. Caught**	**Species**	**No. Caught**
Spotted Seatrout	424 (602-1/2 lbs)	Spotted Seatrout	97 (144-3/4 lbs)
Spot	65	Sea Catfish	11
Gulf Menhaden	50	Spot	5
Sea Catfish	25	Atlantic Sharpnose shark	4
Spanish Mackerel	13	Bluefish	3
Southern Kingfish	12	Harvestfish	3
Bluefish	11	Spanish Mackerel	3
White Trout	10	Southern Flounder	2
Atlantic Croaker	8	Southern Kingfish	2
Cobia	1		
Harvestfish	1		
Ladyfish	1		
Pinfish	1		
Total No. Animals - 622		Total No. Animals - 130	
Total No. Species - 13		Total No. Species - 9	
Total Weight (SST Only) - 602-1/2 lbs		Total Weight (SST Only) - 144-3/4 lbs	
Average Weight (SST Only) - 1.4 lbs.		Average Weight (SST Only) - 1.5 lbs	

STOMACH CONTENTS: SPOTTED SEATROUT

While determining gonadal stages of spotted seatrout, any fish observed with contents in its stomach was further examined. Foodstuffs were identified, if possible, and any partially digested food or remains were listed as such.

It is recognized that spotted seatrout are opportunistic feeders, and it would seem they would show seasonal preferences because of this trait.

Mahood (1974) found fish to be the most abundant food (53.9 percent) in the stomachs of 108 spotted seatrout examined, while shrimp represented 44.9 percent. Menhaden were the most common foodstuff.

In southeastern Louisiana, 368 stomachs of spotted seatrout were analyzed. Of those containing food, fish occurred in 74.4 percent and crustaceans were found in 25.3 percent (Lorio and Schafer 1965).

A total of 281 stomachs were found to contain food in this study. Approximately 78 percent of the fish examined had empty stomachs. Moody (1950) stated that 54 percent of the spotted seatrout stomachs he examined at Cedar Key, Florida, were empty and thought this was due to the fishes' sporadic feeding habits.

Fish composed the majority of the diet, as 94 percent of the stomachs examined contained some species of fish. Shrimp were the most important crustacean (3 percent); *Nereis* sp., a marine polycheate, composed approximately 2 percent of the diet. These worms were found in five spotted seatrout and only during January 1980. This occurrence was noted during a previous study (Adkins et al. 1979) and was thought to be either temperature related or correlated to spawning habits of the marine annelid (Table 6).

The most unusual item found in a stomach was a small oyster shell. This was found together with a small eel, thought to be *Anguilla rostrata*, possibly ingested at the same time.

These findings support those of Lorio and Schafer (1965) and Mahood (1974) in that fish were the most important item in the diet of the spotted seatrout and that Gulf menhaden were the most often-found fish. Anchovies, both *Anchoa mitchilli* and *Anchoa hepsetus*, were the second most numerous fish, while white trout were least numerous. Fish and/or fish remains were found during all months, but shrimp were found during April in only one stomach. All other shrimp were recorded during the fall (October, November and December) (Table 6). This may indicate a seasonal pattern as shrimp normally move out of estuaries during the fall, coinciding with the onset of cold fronts. No seasonal pattern corresponding to ingestion of particular species of fish was noticed.

Table 6.
A listing of stomach contents, by month, of 281 spotted seatrout examined from April 1979 through March 1981, Coastal Study Area IV, all stations. Parenthesis indicate number of stomachs in which item was found.

May 1979

Menhaden (3)

October 1979

Tidewater Silverside (8)
Cutlassfish (4)
Anchovy (4)

November 1979

Anchovy (15)
Lizardfish (15)
Fish Remains (2)
Shrimp (2)
Tidewater Silverside (1)

December 1979

Fish Remains (16)
Fish & Shrimp (5)

January 1980

Polycheates (5)
Menhaden (1)

February 1980

Fish Remains (1)

March 1980

Fish Remains (9)
Menhaden (1)

April 1980

Menhaden (10)
Fish Remains (8)
Croaker (5)
Anchovy (1)
Eel & Oyster Shell (1)
Shrimp (1)

May 1980

Fish Remains (2)
Anchovy (1)
Croaker (1)

June 1980

Fish Remains (3)

July 1980

Menhaden (1)

August 1980

Fish Remains (20)
Menhaden (7)

September 1980

Fish Remains (4)
Menhaden (1)

October 1980

Menhaden (38)
Shrimp (5)
Fish Remains (3)
Fish & Shrimp (1)
Lizardfish (1)
White Trout (1)

November 1980

Menhaden (32)
Fish Remains (19)
Crabs (3)

December 1980

Fish Remains (2)
Anchovy (1)
Shrimp (1)

January 1981

Lizardfish (2)
Anchovy (1)
Menhaden (1)

March 1981

Anchovy (4)
Menhaden (4)
Fish Remains (2)
Lizardfish (1)
Tidewater Silverside (1)

Totals

Menhaden (99)

Fish Remains (91)

Anchovy (27)

Lizardfish (19)

Tidewater Silverside (10)

Shrimp (9)

Fish & Shrimp (6)

Croaker (6)

Polycheates (5)

Cutlassfish (4)

Crabs (3)

White Trout (1)

Eel & Oyster Shell (1)

DISCUSSION

Data gathered in this study indicate that gill nets were an efficient gear to use in sampling schemes designed to yield information pertaining to coastal finfish populations. Crandall, Lyons, and Luebke (1976) compared results of sampling techniques using monofilament and nylon gill nets and rotenone. They found each sampling devise to furnish a close approximation of species present and relative abundance of dominant fishes. Gill netting was determined to be the most economical method of determining these two statistics.

Monofilament webbing has been the subject of controversy and study wherever it appeared in a fishery because of the belief in its greater efficiency. In the Washington salmon fishery, monofilament gill nets were at least the equal of multifilament gill nets. In light of data presented, total efficiency of monofilament compared with multifilament (all species in all seasons) was 2:0 (Washington 1972). Hansen (1978), a commercial gill netter, found monofilament to be more efficient during calm water daylight or twilight conditions. In periods of darkness, efficiency was about equal. Pristas and Trent (1977) found monofilament nets to yield a higher catch per net than multifilament and catch per net to be much greater at night. They also reported net damage to be less in monofilament (.16% vs .24% for multifilament), that fish could be removed faster, fewer crabs were caught, nets tangled less, and nets could be set and retrieved faster than multifilament nets. Disadvantages noted were that monofilament was more expensive to buy and maintain and that more storage room was required. Hansen (1978) felt that useful life of monofilament nets was approximately 1/2 that of multifilament nets. Recent studies have revealed that in herring catches, the quality of fish caught in gill nets was poorer than the quality of fishes taken in seines (National Fisherman 1981).

Monofilament webbing was determined to be initially more expensive, more difficult to maintain and repair, harder to work, (because of tangling), and less durable, during this study.

In 1976, Lyles stated that the objective of fishery management should be to establish, through research, the quantity of any species that may be removed without damaging the population and permit the commercial harvester to harvest with the most efficient gear. Regulations placed on a particular type of gear should follow biological and economical recommendations and not be based on emotional appeal, which is too often the case. The current trend toward gear restriction has been visible for some years. Siebenaler (1955) stated that decreases in abundance of fish, real or supposed, cause demands for restrictive regulations on the fishery. Prohibition of gear is the usual trend, and the most efficient of these gear is most vigorously attacked. All such attacks are made in the name of conservation.

Another method of regulation supported by one group is the permanent closure of areas to netting. Irby (1974) found that competition between sport and commercial fisheries has increased commensurately with the number of sports fishermen. Regulations closing certain areas to commercial fishing are most often enacted in heavily urbanized areas where recreational angling and boating is considered by local officials to be more desirable sociologically and economically than commercial fishery production (Tabb 1970). Merriner (1980) stated that the present trend on the Gulf coast, at least, is toward an increasing administrative and legal favoring of the recreational fishery over the commercial fishery. Humphreys (1979) pointed out the core of this management problem when he stated "most of the (fishery management) tools manage people; the manipulation of the fish population comes about by controlling how people influence the fish populations".

In this study, monofilament gill nets were found to be more efficient than nylon nets; 42 individual species were taken. Four species of those animals were captured only in nylon webbing. In each material type, 1-5/8″ bar mesh was most efficient, followed by 1-7/8″ bar mesh, and least efficient was 2″ bar mesh. Generally, larger animals, both in average length and average weight, were taken directly proportional to an increase in mesh size. Lorio et al. (1980) reported that it was indicated that larger mesh size catches larger fish, with smaller mesh size catching the larger number of fish. Some organisms, such as blue crabs and sea catfish, were caught in all mesh sizes and in both materials, with nylon nets usually being more efficient than monofilament for capturing blue crabs. Morphological characteristics rendered these animals easily caught no matter what gear was used. Other finfish, e.g., Spanish mackerel, were captured almost exclusively in monofilament webbing, with smaller mesh sizes being more efficient than larger mesh. Spotted seatrout were caught more efficiently in 1-5/8″ bar mesh and least efficiently in 2″ bar mesh, regardless of material, as the smaller mesh captured approximately 5 to 9 times as many spotted seatrout as did the largest mesh. At only two stations (E-1 and E-3) were more spotted seatrout taken in nylon nets.

A decrease in catch was associated with a decrease in mean water temperature, with the reverse being true in spring and early summer. Massman et al. (1958) reported similar findings, as did Mahood (1974).

One drawback associated with gill nets is fouling of the nets with foreign material. Hamley (1975) found the efficiency of gill nets to decrease as fish are caught or as foreign matter fouls the net. Kennedy (1951) reported that when comparing catches made in 151 pairs of cases, those gill nets cleared daily exhibited a greater catch than those cleared every two days. More locally, studies revealed that large catches of alligator gar, filamentous algae, Gulf

menhaden, and gizzard shad may have affected catches in gill nets (Matlock et al. 1978).

More and larger fish were captured at more southerly stations, with spawning peaks of spotted seatrout found to occur during May, June, and July. The sex ratio was found to be approximately one male to ten females, which is lower than most other investigations have shown. Tabb (1961) stated the sex ratio of spotted seatrout in samples from the fisheries using different gear types varied with age, but usually showed more females than males. This change in sex ratio was especially pronounced in very old fish, where only females were found.

As no investigation of age was done in this study, this possibility could not be determined. The skewed sex ratio could have been the result of gear selectivity, as the majority of male spotted seatrout may have been too small to capture in the gear utilized.

Spotted seatrout were captured later in the year at more northern locations. Smaller trout were also normally encountered when sampling those sites. Turbidity was measured each time a station was sampled; larger catches recorded in nylon nets usually corresponded to higher turbidity readings. Turbid conditons were usually encountered most often in spring and fall months because of rapid weather changes. These months were usually periods of highest catches in both materials, so one factor may have overshadowed the other.

Gill nets of various mesh sizes, designs, and materials have been blamed for variations in finfish populations all over the world. The most often-used reason is "they're too efficient". In this geographical area, the fish usually linked with gill nets are spotted seatrout, especially in the coastal zone. Variability in finfish populations is considered normal; Merriner (1980) pointed out "the variability in annual reported catch is typical for this species (up to 18-fold change within two years, 1975 and 1977) and seems to parallel the climactic conditions of the preceding spring and winter, i.e., low catches follow severe winters". He was discussing spotted seatrout.

Matlock, Weaver, and Green (1977) concluded that commercial netting in Texas reduced populations of spotted seatrout and red drum and that this effect was apparently localized. They further reported that both species were capable of sustaining their populations when subjected to commercial netting unless adverse environmental conditions exist.

Davis (1980) also found that, even though the Whitewater Bay Area was closed to commercial fishing, it did not have a higher recreational yield or catch rate. It thus appeared that commercial effort in other areas increased the total yield without decreasing recreational yield.

Tagging studies conducted by Iversen and Moffett (1962) showed that fishing mortality attributable to commercial and sport fishing represented only one-sixth of the total mortality of that population. The remainder died from natural causes (old age or predation).

In Mississippi, Etzold and Christmas (1979) stated that there was not evidence that overfishing is currently a factor in Mississippi's total finfish landings. The resource appears to be healthy, as evidenced by a general upward trend in reported landings and continued existence of a large recreational fishery in which the landings are largely unreported. They further stated that all available reports indicate that recreational catch of favored target species (including spotted seatrout) generally exceeds reported commercial landings of these species. This was also determined in Texas by Heffernan and Green (1977) who reported recreational fishermen harvested 3,523,551 kg (7,751,812.2 lbs), or 8,016,800 fish, whereas commercial fisherman took 2,395,830 kg (5,270,826 lbs) of fish from the same area over a two-year period.

Juneau and Pollard (1981) found that recreational finfishermen captured about 98.3 percent of all fish harvested, as compared to 1.7 percent by commercial fishermen. This percentage (98.3) included 95 percent of the red drum and 100 percent of all spotted seatrout landed. This survey was conducted in the Vermillion Bay complex, Louisiana.

Based on these and other findings, it is apparent that finfish populations may fluctuate drastically; these fluctuations are dependent upon numerous factors. The prime culprit is very often not monofilament gill nets or netting. Rather, most studies have indicated the urgent need for a healthy environment. Continuation of a healthy environment may be somewhat expensive, but not nearly as expensive as it would be to replace wetlands and their associated benefits. An example of this was reported by Sullivan (1976) when he said it would cost at least $50,000 an acre to replace all of the functions that a wetland performs. Craig, Turner, and Day (1977) reported fishery losses to be directly proportional to wetland loss. They estimated a loss of $8 to $17 M annually in fishery products and services as a consequence of wetland loss in Louisiana.

As many researchers have stated, habitat is the one most critical link in the productivity of a fishery. There may be indirect factors, such as adverse effects on the food chain, or direct effects as dredging destroying spawning grounds. Degradation may occur in an estuary or many miles away in a riverine drainage system. Wherever or whatever the cause, should the present trend in Louisiana's coastal zone continue, the future of her seafood industry, of which finfish are an integral part, will almost surely be adversely affected.

MANAGEMENT RECOMMENDATIONS

Based on the results of this and earlier studies, especially Adkins et al. (1979), the following management recommendations are offered for user groups that will be affected, including goals that managers of this resource should seek to attain.

Industry

1. Update all licensing systems now employed by increasing license fees substantially.
2. Establish a severance tax per pound on all fish taken for resale.
3. Strictly enforce laws prohibiting sales and/or purchase of fish by or from anyone not possessing a valid commercial fishing license.
4. Require monthly submission of accurate purchases, sales, shipments, etc.

Commercial

1. Establish seasons for finfishing - should open September 1st and close April 1st of each year. Any gear authorized by the Department could be utilized during open season.
2. Allow use of monofilament webbing, no smaller than 1-5/8" bar mesh. 1-7/8" bar mesh would be more appropriate.
3. Update current licensing system by increasing cost of licenses substantially, with increased and mandatory penalties for violations.
4. Require monthly submission of accurate catches, sales, shipments, etc.

Recreational

1. Establish a resident and a non-resident saltwater angling license.
2. Establish a combined limit of 50 spotted seatrout and/or red drum per day per angler, with possession limit being the same.
3. Increase penalty for above, with penalties being mandatory.
4. Strictly enforce laws prohibiting sales of fish if not in possession of a valid commercial fishing license.

Management Agencies

1. Maintain a comprehensive, viable program with coordinated efforts in all Gulf Coast states that would monitor available stocks.
2. Encourage educational efforts concerning finfish populations and their direct dependence upon the environment.
3. All management of finfish and all other renewable natural resources should be vested in the appropriate state management agency, without legislative influence.

All groups should insist upon strict, continual enforcement of laws governing this and other natural resources, with full prosecution by local courts. Without proper enforcement, no management plan will fulfill its objectives of providing maximum benefits to as large a segment of the population as possible while maintaining a viable, continuing resource.

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